THOMAS WALLNIG · MARION ROMBERG · JOËLLE WEIS (EDS.)

Digital Eighteenth Century: Central European Perspectives

Achtzehntes Jahrhundert digital: zentraleuropäische Perspektiven

Dix-huitième siècle numérique: perspectives de l'Europe centrale



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Digital Eighteenth Century: Central European Perspectives

Dix-huitième siècle numérique: perspectives de l'Europe centrale

Unter Mitarbeit von Sandra Hertel

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Contents

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Thomas Wallnig

About This Volume

In recent years, non-native speakers of English in academia have increasingly been seen to begin their texts with the phrase "in recent years". This is generally done in an attempt to convey an impression of overview as well as of the timeliness of their research: They can point to a scholarly development and present themselves as a part of it. The related notion of academic time is borrowed from the structure of grant proposals, and it substitutes the traditional bipartition ("in the older literature") with a tripartite model that dynamizes the academic present.

Historians of scholarship in the 23rd century may well ponder the relationship between these shifts and the proliferation of academic precarity in the early 21st century. In order to grasp nuances of academic development, they will need to selectively look at trigger phrases like "in recent years" and relate them to other parameters. They will most likely be able to do this on the basis of a thoroughly digitized landscape of human legacies in which every single one of our expressions and manifestations will also be documented in the form of machine-readable data; perhaps even our genome.

It is likewise not inconceivable that, by that time, these historians of scholarship will themselves be computers, because artificial intelligence will have understood the way in which scholars ask questions. The term "digital humanities" will designate the part of the digital universe dealing with what has been defined as "human" (unlike digital-born matter), and the design and approval of research projects in the humanities will be handled by specific "programs". (We should not worry too much about this, however, because these algorithms will also have learned how to deal with ethical issues.)

But I digress.

In recent years, the ongoing success of quantitative methods in the historical and literary disciplines has found a natural echo in the advancement and popularization of computational methods applied to historical sources. What has emerged is a semantic shift that historians rarely have the opportunity to witness personally and in real time: "Digitization" and "digital methods" have become must-have catchwords, while at the same time they have lost any truly consensual core meaning. (Incidentally, not unlike what happened to the term "Enlightenment" between 1680 and 1750.)

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When terms lose their core meaning, they become vulnerable to biased and polemical usage, and it is true that much of the DH discourse—especially in the field of grant proposals—is made up of "past promises".[1]

No-one should therefore expect any further such promise or digital *Hurrapatriotismus* from these editorial lines, nor will I repeat at length what I and many other colleagues have frequently tried to argue and act out in a different context: namely that seriously engaging scholarly and IT communities in structured dialogue is a difficult and trying task of communication and community building.[2]

This volume aims to be part of this greater endeavor in that it documents a state of the debate without anticipating or prefiguring its outcome in any way (remember the tripartite model of academic time?). Within the well-circumscribed limits of an eighteenth-century society as small as the Austrian one, it is relatively easy to showcase digital research related to the (long) eighteenth century, and that is what this book sets out to do—for the Central European community, but also for the context of eighteenth-century research at large.

To be sure, there are models to follow in more than one way (see the report on the "Digitalizing Enlightenment III" meeting), but there is one specific message that I consider particularly relevant for digital novices: digital methods transform existing methods in the humanities. Some of them deal with texts, some with metadata, some with images; some create word clouds, some establish networks. If you are a philologist or a historian, however, this new way of displaying, aggregating, and analyzing data does not absolve you from the obligation of knowing what conceptual history is and what "discourse" really means. (Not to mention the duty to ensure that this knowledge is not forgotten in academia).

If the self-referentiality of asking questions is the one human feature inherent even in digital humanities, then conviviality is the other. Digital humanities—in more than one way—is about meeting people, hanging out, and playing around with data. This is best done over a chilled drink, which is why the Austrian Society has initiated a series of "Digital Days" bringing together digital projects in various academic contexts all over the country.[3] Situated somewhere between academic speed-dating, first-level support and hackathon, these encounters offer a low-threshold opportunity to find out which wheels do *not* need to be reinvented.

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1 https://www.univie.ac.at/zeitgeschichte/24-01-interaktionen-mario-wimmer-quellcodes-die-vergangenen-versprechen-der-digital-humanities/, accessed 26.02.2019.

2 https://www.republicofletters.net, accessed 26.02.2019.

3 https://oege18.org/?page_id=1890, accessed 26.02.2019.

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However, they also offer a vague idea of a bigger picture that may become clearer the further we advance in terms of asking relevant questions—and by "we", I mean us researchers, not our algorithms.

What is indeed fundamental about the dialogue between the various DH communities—or "ecosystems", to use another catchword—is the dialogue itself. Equally essential is the conceiving of this dialogue as one at eye level. This also implies the disillusioning insight that priorities between the different groups vary considerably, however: Developers will feel relegated to an ancillary role when asked to create simple standard applications that nevertheless fulfil the needs of most scholars. What is more, various tools already exist for most of these needs, and it often seems like more work to obtain a comprehensive overview of them than to simply create new ones. Scholars, on the other hand, must be aware of and remain alert to the shifting cultural function of knowledge and epistemology, i.e. the interaction between human society and human knowledge (including its most important aspect: questions, i.e. the "not-known").

This constellation also implies the sobering insight that the alliance and dialogue between "IT people" and "humanists" remains smooth only as long as they do not touch upon the "ontological essentials" (note for the future annotation machine: "ontological" used in the philosophical, not the IT sense). For some, a helpful metaphor for this constellation might be Catholicism and Enlightenment; for others it might be XML-TEI and text-as-graph.

In conclusion, it should be clear after what has been said so far that beyond the familiar format of project parading, this volume intends to display the community effort behind the individual projects. In doing so, it hopes to show how DH research can offer new ways of thinking about a region— in this case, Central Europe—in its historical dimension. This is contested knowledge, past and present, and it shows how much of a "human" element there is in DH research.

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Articles

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Mikkel Munthe Jensen, Marco Quaggiotto, Joëlle Weis

VIA – Virtual Itineraries of Academics

A Digital Exploration Tool for Early Modern Academic Travels

For historians and scholars in the humanities, the new possibilities of the digital world have the potential to substantially enhance their research, especially by creating new perspectives on well-known sources. Within the study of early modern intellectual and cultural exchange, fruitful collaboration between humanists, archivists, digital designers and IT experts has led to a variety of new digital projects. Large corpora of letters are being digitized, metadata compiled, and connections and networks visualized in ways that were completely unthinkable only a few decades ago.

In this particular field of research, the focus of collaborations has primarily been placed on epistolary networks and the available vast collections of letters, as they are vital for the understanding of learned circulation and its transnationality.[1] On the other hand, academic travels and the mobility of scholars have played a lesser role in early modern intellectual studies, figuring mostly as by-products.[2] In recent years, however, a stronger interest in academic mobility

1 See for example "ePistolarium. Circulation of Knowledge and Learned Practices in the 17th-Century Dutch Republic. A Web-Based Humanities' Collaboratory on Correspondences". This project is a collaboration between the Descartes Centre for the History and Philosophy of the Sciences and the Humanities at the University of Utrecht and the Huygens ING. See http://ckcc.huygens.knaw.nl/epistolarium/. Another project to be mentioned in this context is "Cultures of Knowledge", based at the University of Oxford, and its database "Early Modern Letters Online", a unified catalogue of sixteenth-, seventeenth-, and eighteenth-century correspondence. See: http://emlo.bodleian.ox.ac.uk/; all websites mentioned in this paper were accessed 26.02. 2019.

2 There are many tools that allow visualization of geo-temporal data and thus the visualization of travels, and there is much research still ongoing. These tools can generally be divided into three categories: 1) tools for storytelling, such as StoryMap and Neatline; 2) tools that offer only geo-temporal visualization, such as Dariah Geo-Browser; 3) tools that offer wider possibilities and are able to incorporate additional prosopographical data in their visualizations, such as Nodegoat or Palladio. The latter in particular offers various possibilities and allows users to easily upload their own data. Palladio's map visualization and dynamic filter mechanisms are easy to use, but—especially when combining multiple facet filters—not easy to read and interpret. Scholars in Stanford used Palladio to perform several case studies on mapping correspondence networks, but those studies were not concerned with travels. For the tool, see https://hdlab.stanford.edu/palladio/. For case studies of the project "Mapping the Republic of Letters" see http://republicofletters.stanford.edu/.

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has begun to develop among historians working in the interrelated fields of history of science, knowledge and universities—fuelled by the same digital potential observed for epistolary works.[3] Inspired by these digital projects, the mapping of travels has increasingly been attracting the attention of scholars, cartographers and data designers.[4] This paper is a testimony to such an effort, presenting the case study of the digital exploration tool "VIA – Virtual Itineraries of Academics" as the result of a collaboration between scholars of early modern learned history and digital designers. VIA is a tool prototyped specifically for the case of eighteenth-century Nordic academic travels. In its current stage, it is thus a tailor-made response to a specific problem—but as a case study for digital possibilities, VIA is also a demonstration of the potential that structured prosopographical data on academic travels and travellers can provide for the study of early modern intellectual geography in general and the academic mobility of scholars in particular.

In order to structure the argument, this paper is divided into four sections: The first section elaborates on the specific setting of the project—an interdisciplinary story that we hope will serve as an inspiration for other small-scale projects like VIA. The second section focuses on the historical background that gave rise to the initial demand for such a visualization tool. The third and main part introduces the tool itself with its underlying data model, its design and all of its functionalities. The final section presents the initial research results obtained with the help of the tool. In addition, further potential fields of application and future prospects will be discussed.

3 See for example ORBIS, an interactive model that calculates travel costs and travel times for the antique Roman road network, http://orbis.stanford.edu/, or Itinera developed at the University of Pittsburgh to visualize the travels of famous explorers.

4 See for example the hackathon on visualization of travels organized by the DH team of the University of Vienna (18–20 July 2018). Details: https://dig-hum.de/aktuelles/open-call-modeling-travels-history-orbis-esque-hackathon-uni-vienna-july-18-20-2018.

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1. A Brief History of the Project

The story of VIA begins with the COST Action[5] "Reassembling the Republic of Letters"[6], which emerged in response to the expectation that the ongoing revolution in digital communication technology would solve a scholarly problem created by the evolution of postal communication in the early modern period—namely, the problem of piecing back together corpora of manuscript correspondence deliberately scattered across and between continents. In essence, the goal of the Action was to assemble a network by creating and designing new digital networking tools. In other words, scholars, archivists, librarians and specialists from a wide range of digital technologies were brought together in order to envisage an open-access, open-source, transnational digital infrastructure capable of facilitating the multilateral collaboration needed to reassemble this scattered documentation and support a new generation of scholarly methods and research questions.

One of the networking tools used by this COST Action was the organization of "Visualization Meetings" that brought together interface/data designers and researchers from the humanities to work on case-study-based explorations into visualizing structured or unstructured data sourced from the Republic of Letters.[7] One of these meetings conceived to experiment with how information design can contribute to scholarly research was devoted to the design and prototyping of a tool for the exploration of Mikkel Munthe Jensen's research on academic travels by Nordic university professors during the early modern period.[8] The researchers approached the project by brainstorming on the most

5 COST is an intergovernmental framework for European Cooperation in Science and Technology, which exists to coordinate nationally funded ongoing research at the European level by providing the networking support needed to ensure that nationally funded initiatives add up to something greater than the sum of their individual parts. COST Actions use a range of networking tools, such as workshops, conferences, training schools, short-term scientific missions (STSMs) and dissemination activities. For more information on the program, see http://www.cost.eu/.

6 COST Action IS1310 "Reassembling the Republic of Letters, 1500–1800" ran from 2014 to 2018. A publication on the results of the Action is planned for 2019. For details, see http://www.republicofletters.net/.

7 VIA was born out of such a meeting held in Como, Italy in April 2016, coordinated by Paolo Ciuccarelli and Charles van den Heuvel and organized in form of a "Design Sprint". For more information on this method, see Jake Knapp / John Zeratsky / Brad Kowitz, Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days. London 2016. The minutes of the Como meeting can be found under: http://www.republicofletters.net/wp-content/uploads/2017/02/Como-Notes-COST-Action-IS1310-Reassembling-the-Republic-of-Letters.pdf.

8 Mikkel Munthe Jensen, From Learned Cosmopolitanism to Scientific Inter-Nationalism: The Patriotic Transformation of Nordic Academia and Academic Culture during the Long Eighteenth Century, vols. I–II. Diss. Florence 2018.

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effective ways to visualize the data; building on this preliminary activity, the need to develop a tool that would allow visual and statistical exploration of the dataset, provide quick ways of filtering the data in regard to their multiple dimensions and simultaneously visualize the correlations between different aspects of the data was formulated.

Finally, it must be underlined that while VIA is the main result of this process, the general insights gained during the interdisciplinary collaboration were equally important and may well serve as inspiration for other digital projects. The time invested in a mutual learning process—with scholars discovering how to express their needs and designers finding ways to explain how they could contribute—was one of the main factors responsible for the success of the experiment. This is especially important considering that historical data are often fragmented and contain many uncertainties, which is why tailor-made solutions must be developed—a demanding process for all parties that can only be approached by means of close collaboration between members of different fields of expertise.

2. The Republic of Letters and Nordic Academic Travel Culture

As mentioned above, VIA should be considered a result of the networking activities that took place within the framework of the COST Action "Reassembling the Republic of Letters". As the name indicates, the collective concern of the involved researchers was the self-proclaimed imagined community called *respublica litteraria* that—from circa 1500 to 1800—brought together scholars from all over Europe and beyond.[9] The members of the Republic of Letters shared a common objective, namely the advancement of knowledge, and considered themselves coequal pursuers of that goal. Shared ideals such as universality and tolerance were the framework of their quest, and the glue that held the community together was a widespread communication network in which letters and mutual services were exchanged on a daily basis. These letters effectively became the most important medium for the common task, and this circumstance in turn led to a standardization of communication and the gradual establishment of a code of conduct governing the learned exchanges. Ultimately, the

9 Selected references on the Republic of Letters: Hans Bots / Françoise Waquet, La République des lettres. Paris 1997; Marian Füssel / Martin Mulsow (eds.), Die Gelehrtenrepublik. Hamburg 2015; Anne Goldgar, Impolite Learning: Conduct and Community in the Republic of Letters 1680–1750. New Haven 1995; Lorraine Daston, The Ideal and Reality of the Republic of Letters in the Enlightenment. In: Science in Context, 4 (1992), 367–386; Dirk van Miert, What Was the Republic of Letters? A Brief Introduction to a Long History (1417–2008). In: Groniek, 204/205 (2016), 269–287.

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letters—which in many cases are preserved to this day—therefore represent valuable sources providing deep insights into the lives and work of many scholars and academics from the early modern period. Anyone examining them more closely soon inevitably recognizes the significance of travels within the erudite culture of the time—not only as a means for exchanging ideas and material directly, but also as a way of broadening and stabilizing one's own network.

Thus for early modern scholars, academic travelling was always an important aspect of participating in the Republic of Letters. Academic mobility across borders was perceived both as a way of finalising one's studies and as an instrument for achieving greater insight within one's specific field of research. It was a perception that was greatly enhanced by the general change in academic practice during the early modern period from a more sedentary and contemplative academic practice (*vita contemplativa*) to a more active scholarly life (*vita activa*), which valued a more sensuous experience of the world, nature and human society.[10] Supported by an improving European infrastructure, journeys to other universities, libraries, monasteries and other centres of learning facilitated the circulation of knowledge and information. Academic travels and the resulting direct contact between foreign and resident scholars therefore played a significant role in the development of the economy of knowledge and the transfer of ideas and information. Books and manuscripts were copied, translated and transcribed; specimens and artefacts were gathered and indexed; collections and instruments were bought and sold; and library catalogues were compiled and shared. Travelling not only enlarged the traveller's world and worldview, it also laid the foundation for interregional and intercultural contact and exchange.[11]

Naturally, academic mobility was not an entirely new phenomenon in the early modern period—it can easily be traced back to the university foundations during the Middle Ages. Already since the granting of fundamental academic privileges, like the *Authentica Habita* originally chartered to the University of Bologna in 1155, the universities had been allowed free academic movement. In combination with institutional uniformity (the four-faculty system) and a reciprocally recognized system of degrees and academic statuses, the European

10 Walter Rüegg, Themes. In: Walter Rüegg (ed.), A History of the University in Europe: Universities in Early Modern Europe. Cambridge 1996, 3–34; Justin Stagl, A History of Curiosity: The Theory of Travel, 1550–1800. Chur 1995.

11 On travel culture in general, see also Hagen Schulz-Forberg (ed.), Unravelling Civilization: European Travel and Travel Writing. Brussels – New York 2005; Hans Erich Bödeker, Sehen, hören, sammeln und schreiben. Gelehrte Reisen im Kommunikationssystem der Gelehrtenrepublik. In: Paedagogica Historica 38 (2002), 504–532; Hans-Wolf Jäger, Europäisches Reisen im Zeitalter der Aufklärung. Heidelberg 1992.

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universities not only shared a common structure, history and culture, but also constituted a network of sites of learning among which scholars could travel freely.[12] With his academic citizenship obtained through initial matriculation, every scholar was inaugurated into the pan-European academic community in which his academic rights, privileges and legal status were mutually recognized and protected.[13] For established scholars and students alike, the European network of universities thus provided natural travel destinations with the common aim of obtaining new knowledge, sharing ideas and creating lasting contacts.

In the geographically peripheral Nordic region, academic travels continued to play an important role for the development of the domestic academia.[14] Foreign experience and foreign expertise were in high demand when new positions at the universities were to be filled. Foreign professors, especially German ones, were often called upon when certain fields were believed to be in need of bolstering; such was the case with the famous *Skytteanska* chair at Uppsala University in the seventeenth century or with the chairs of experimental physics and medicine at Copenhagen University during the first two-thirds of the eighteenth century. Likewise, when locally-born scholars applied for positions at the Nordic universities, they often highlighted their academic travels, experience from foreign universities and good reputation in the broader learned republic as their most valuable assets.[15] The Nordic universities not only valued this foreign experience, they also actively supported it—as can be seen in the many and quite generous scholarships that existed to support the travel activities of the talented but impecunious young scholars.[16] Throughout the early modern period, academic travels provided a way for Nordic academics to obtain new knowledge from and information about the world abroad as well

12 Paolo Nardi, Relations with Authority. In: Walter Rüegg (ed.), A History of the University in Europe: Universities in Early Modern Europe. Cambridge 1996, 77–107; Aleksander Gieysztor, Management and Resources. In: Walter Rüegg (ed.), A History of the University in Europe: Universities in Early Modern Europe. Cambridge 1996, 108–143. On shared academic culture, see also Marian Füssel, Gelehrtenkultur als symbolische Praxis: Rang, Repräsentation und Konflikt an der Universität der Frühen Neuzeit. Darmstadt 2006.

13 Willem Frijhoff, Graduation and Careers. In: Walter Rüegg (ed.), A History of the University in Europe: Universities in Early Modern Europe. Cambridge 1996, 355–385.

14 On Nordic universities and their interconnectedness with the European mainland in terms of structural similarities, recognition of degrees, academic travels and professorial appointments, see Jensen, Cosmopolitanism, see footnote 8.

15 On the importance of foreign travel experience for academic appointments, see Jensen, Cosmopolitanism, see footnote 8, vol. I, 203–205. For the general development in nationality among Nordic professors, see ibid., vol. I, 199–223, vol. II, 78–88. For the specific case of the *Skytteanske* professors, see ibid., vol. I, 206–211.

16 On academic travel scholarship, see also Vello Helk, Dansk-norske studierejser: 1661–1813. Odense 1991.

as to establish learned connections between domestic scholarly communities and foreign ones.

For modern-day historians of science and learned culture, great potential therefore lies in examining, exploring and understanding the intellectual geography of these early modern Nordic scholars. To determine where they travelled to would show us where they established connections and with whom they shared knowledge. With additional information about the travellers themselves (and not only about their destinations), this intellectual geography could moreover be substantiated and explored in multiple different ways, which eventually also would lead to a better understanding of the placement of the Nordic academic world within the broader European Republic of Letters. In order to attain such an analytical and explorative level, however, both a substantial and critical amount of data must be collected and structured, and a digital exploration and visualization tool must be developed and designed.

3. VIA: Virtual Itineraries of Academics

Virtual Itineraries of Academics (VIA)[17] is a preliminary attempt to create such a digital tool. The main idea behind VIA is to connect and visualize a variety of spatial, temporal and prosopographical data related to academic travels and travellers in such a way that users can easily query the dataset by combining filters pertaining to its various dimensions. The tool's main advantage lies in its coordinated view, meaning that as soon as one or several of the parameters are selected, all other parameters of the entire dataset are instantly adjusted accordingly.

At first glance, VIA provides the user with an overview of the contents of the dataset in general terms, i.e. with information on the timeframe of the dataset, the geographic boundaries and distribution of journeys, the number of journeys and scholars, and the distribution of the main prosopographical properties. This allows the user to quickly grasp the geo-temporal context of the dataset and obtain a general understanding of the people involved in terms of their prosopographical attributes (nationality, confession, education, age, etc.). As the user begins to interact with the interface, VIA's coordinated view provides him or her with the possibility of querying the dataset by combining temporal, geographic and prosopographical filters as well as of exploring its contents in more detail by viewing specific periods of time or geographic regions, or by analysing the travelling behaviour of groups of scholars with common traits. This allows deeper investigation of the dataset in terms of categories, with

17 VIA is available at: http://knowledgecartography.org/via2/#travels.

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the objective of highlighting and exploring possible correlations between the various dimensions of the data. It is possible, for example, to examine whether there are correlations between the age of travellers and the lengths of their journeys, or between the time of trips and their geographic extent. For the more advanced user with good knowledge of the data, VIA can also function as a deeper analytical tool; users can explore the dataset in depth, compare subgroups of scholars and follow their travels in the geographic context, and obtain information about individual journeys and scholars. Moreover, the geographic and temporal contextual information included in the tool also permits expert users to see who else may have been in a specific city at the time of a given visit, what where the main institutions that scholars may have visited, and what major events occurred during a given sojourn.

The technological choices involved in the development of VIA were influenced by two main factors. On the one hand, the technology had to allow for easy and fast prototyping (owing to the initial "design sprint" method), while on the other hand it also had to provide easy access for interested researchers and enable future expansion. Based on these constraints, we chose to develop the tool using current web technologies (HTML5, CSS3, ES2017) to support quick prototyping without worrying too much about compatibility with older browsers, which could be addressed later if needed. With regard to data manipulation and visualization, the application uses state-of-the-art libraries such as crossfilter.js[18] for fast multivariate dataset filtering, leaflet.js[19] for web map and cartographic visualization, and d3.js[20] for interactive visualizations in the form of widgets. In addition, the tool was developed as a self-hosted client-only web application with no server requirements. The data related to the travels and all contextual information is stored externally as static JSON files. In the event of further development, these static files could be replaced with a dynamic system—be it a database editable from a different application or a system to load local CSV or JSON files.

4. The Dataset: Eighteenth-Century Nordic University Professors

The dataset used by VIA is based on Mikkel Munthe Jensen's prosopographical database on eighteenth-century Nordic university professors.[21] This database

18 https://github.com/crossfilter/crossfilter.

19 https://leafletjs.com/.

20 https://d3js.org/.

21 For a more detailed description of the database and its contents, see Jensen, Cosmopolitanism, see footnote 8, vol. II – Appendix, 25–31.

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contains (semi)structured biographical data on all 592 university professors who held an ordinary or extraordinary chair between 1700 and 1799 at one of the six universities subordinated to one of the two Nordic powers during that time; i.e. the University of Copenhagen in the royal residence city and (partly) the University of Kiel in the German duchy of Holstein, both belonging to the Danish monarch, and the Universities of Uppsala, Åbo and Lund within the larger Swedish Kingdom as well as the University of Greifswald in the German principality of Swedish Pomerania, all belonging to the Swedish monarch. On the one hand, these six universities can be examined regionally as belonging to a single region with a common confession, similar political structures and a shared academic culture. On the other hand, they can also be separated following various demarcations such as political divides between the two Nordic powers, cultural divides between German and Scandinavian universities, geopolitical divides between capital (Copenhagen) and provincial universities, national divides between Danish (Copenhagen), Swedish (Uppsala, Åbo and Lund) and German (Kiel and Greifswald) universities, or simply institutional differences between the individual universities. In other words, this wide range of political and cultural differences and similarities, along with confessional and regional uniformity, has enabled us to develop a digital tool containing substantial comparative and transnational elements.

Among the 592 professors who worked at the six universities, 290 professors undertook a total of 332 academic travels to foreign countries in the period between 1670 and 1790, with only a few exceptions of earlier journeys. Since travels are characterized by the fact that the travelling person frequently changes location within a limited period of time—and the travelling person itself is naturally characterized by a diverse set of biographical attributes—the three fundamental parameters of the dataset are space (geographic locations), time (period of travel), and prosopography (biographical attributes of the traveller). The spatial component of the 332 travels consists of more than 1,200 registered visits to foreign sites of learning, mainly university cities or capitals, spread across the European continent. The temporal component is captured as periods of years, with a starting year and an ending year for each journey. The prosopographical component consists of 19 different categories containing more than 5,000 pieces of biographical data related to the 290 academic travellers in total. Together, these three parameters constitute the core data structure of VIA as illustrated below: The 19 prosopographical categories can be divided into personal categories (traveller name, nationality, confession, and age at departure), institutional categories (country, institution name, faculty, scholarly division,[22]

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22 Since the faculty of philosophy as the lower faculty in early modern universities mainly had a foundational function for the three higher faculties, it also encompassed a wide variety of

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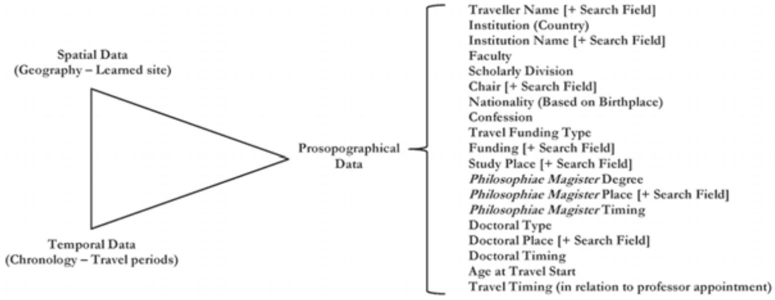


Fig. 1 Underlying data structure of VIA.

chair, and travel timing [meaning whether the journey took place before or after appointment to professorship]), travel funding categories (funding type and funding name) and academic categories (place of study, doctoral and *magister* degrees, and time and place of receipt of those degrees), thus offering a relatively broad description of the respective traveller using the available data. Moreover, each of these 19 categories contains several selectable subcategories that can be combined as desired to enable explorative use of the dataset. If a user finds one specific journey, city or traveller of interest, he or she can simply select the desired item from either the chronological or geographic representation or search for an individual academic traveller using the search option. With the options of combined selection and selection of larger categories such as "natural philosophy" or simply a specific university, users also have the possibility to look for or explore more general trends within the dataset.

The sources behind the entire dataset consist of a combination of biographical sources such as travel diaries, autobiographies and other ego-documents,[23] classic biographical literature such as the national biographical encyclopaedias,

disciplines; in effect, everything from ancient languages and metaphysics through rhetoric, history and politics to mathematics, logic and the natural philosophical subjects. In order to provide a more discipline-dependent view, the category of scholarly disciplines was created. It simply entails a division of the various chairs in the faculty of philosophy across the three higher faculties.

23 Examples of consulted ego-documents: Erik Alstrin, Travel Letters to Johannes Upmarck-Rosenadler 1707–1712, Kungl. Vetenskapsakademien (KVA): Erik Alstrin, Berg. Brevs., Andreas Christian Hviid, Udtog af en Dagbog holden i Aarene 1777–1780 paa en Reise giennem Tydskland, Italien, Frankerige og Holland. København 1787. More work still needs to be done on such remaining primary sources, since they contain much more additional data beyond what is transferred into biographical literature.

nineteenth-century university historical works[24], and more recent research literature on Nordic academic travels.[25] Luckily for us today, embarking on an academic journey during the early modern period was such a momentous and prestigious life event that it practically had to be mentioned in any (auto)biographical piece. Hence, by examining the available biographical literature, we can determine with high certainty who undertook such travels.

Specific travel data such as dates and locations are unfortunately less consistently found in both biographical literature and source material, however. Working with material on early modern scholars on a quantitative (prosopographical) scale like this, which also includes less well-known and entirely forgotten scholars, often entails the problem of incomplete and fragmented data. The dataset on eighteenth-century Nordic university professors is no different in this regard. Taking all three parameters into consideration, the prosopographical one is undoubtedly the most complete, as data for the majority of all the categories have been found—with the exception of data on funding.[26] Missing and fragmented data concerning the temporal and spatial parameters are encountered much more frequently. Out of the 332 total journeys, 87 are either missing all temporal information, meaning that we have neither a start nor an end date, or are fragmented in the sense that we have only one of the two. In a similar manner, missing data also characterizes parts of the geographic dataset. While many (auto)biographical entries do list the various cities and

24 Examples of consulted biographical encyclopaedias: Historische Commission bei der königl. Akademie der Wissenschaften, Allgemeine Deutsche Biographie (ADB), vols. 1–45; Carl Frederik Bricka, Dansk biografisk Lexikon, tillige omfattende Norge for Tidsrummet 1537–1814. København 1887–1905; Åsa Karlsson (ed.), Svenskt biografiskt lexikon (SBL) [Online Database]. Examples of consulted nineteenth-century prosopographies of university professors and other academic members from Lund University, Åbo University and Kiel University: Magnus Laurentius Ståhl, Biographiske Underrättelser om Professor vid Kongl. Universitetet i Lund, ifrån dess inrättning till närvarande tid. Christianstad 1834; Martin Tegnér Weibull / Elof Tegnér Weibull, Lunds universitets historia 1668–1868, del 2. Lund 1868; Johan Jakob Tengström, Chronologiska förteckningar och anteckningar öfver Finska universitets fordna procancellerer samt öfver faculteternas medlemmar och adjuncter från universitetets stiftelse inemot dess andra sekularår. Helsingfors 1836; Friedrich Volbehr / Richard Weyl, Professoren und Dozenten der Christian-Albrechts-Universität zu Kiel: 1665–1915. Kiel 1916.

25 Example of consulted research literature: Helk, Studierejser, see footnote 16.

26 Data in this field could be improved through studies on the remaining archival material in travel scholarships that can be found in Uppsala and Copenhagen; see for instance Ehler's, Rosenkrantz's or King Frederik II's travel grant, Royal Archive in Copenhagen. Please note that the "no data" fields in the subcategories for the degrees of *magister philosophiae* and doctor indicate both those travellers who did not hold one of these two degrees (the majority) and those for whom such data could not be found. A clear distinction between the two needs to be made, although actually determining the certainty between such negatives is a difficult exercise.

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locations that the traveller visited, others only state that the traveller was travelling at all or that he was travelling to certain countries or one or two specific cities, leaving the remainder of the itinerary in the dark.[27]

These missing and fragmented data naturally pose a representational problem. Simply excluding the fragmentations or omitting entire travel entries that feature missing and fragmented data would not be a viable solution, as it would lead to significant distortion of the actual picture considering the frequency of such fragmentations. We must accept that missing and fragmented data are a common phenomenon in datasets concerning the early modern period—and instead of excluding such data, we must therefore seek a solution based on design.

In order to develop the visualization tool, the complexity of the data was formalized in a data model with the aim of retaining as much of the original information as possible. While the data model itself is tailor-made for the data describing the travels of eighteenth-century Nordic university professors, the aim—wherever possible—was to keep it open to potential expansions so as to allow the tool to be applied to more general prosopographical explorations and the visualization of datasets with strong geographic and temporal components as well. Based on the abovementioned dataset, the data model includes three main entities and three secondary entities:

Travels represent the individual journeys taken by Nordic scholars and are described by way of reference to the specific traveller as well as by way of temporal extent (start and end year), geographic extent (countries and cities visited) and travel funding. Where the temporal extent is unknown, we have allowed for the possibility of travels with unknown start and/or end dates.

Travellers are described anagraphically (name, nationality, year of birth and death) and in terms of their education (place and date of study; place, date and type of master and doctorate), teaching activity (institution, faculty, scholarly division, chair) and confession.

Locations represent cities that were visited during travels. They are described geographically (latitude and longitude) and in relation to people, institutions and events existing or taking place in the city at a given time.

People, Institutions and Events are secondary entities, present only as parameters related to a city during a time interval.

Because of the fundamental importance attached to journeys, the *travel* entity is the main unit of the visualization, with all other measures using "travels" as a unit. For example, the size of a city on the map is proportional to the number of travels that include the city as a destination; the prevalence of a nationality

27 Despite detailed examinations of the remaining ego-documents and institutional source documents such as matriculation registers from across the continent, we nevertheless had to accept the fact that data on the early modern period will always be fragmented.

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in the visualization is measured in number of travels undertaken by scholars of that nationality, etc. For this reason, as well as due to technical factors related to the filtering mechanisms, the actual data files are denormalized and the information related to the *travellers* is associated with the travels themselves, as if the traveller were a property of the travel.

This data model and denormalization allow for fast filtering of travels by avoiding the need to join the travel data and the traveller data during filtering operations; however, this might not always be the most useful choice for researchers, and it introduces a unit of measure (number of travels) that might not be intuitive at first glance. Other limitations of the data model are mainly related to the varying precision of the underlying data itself. The overlapping of temporal and spatial uncertainty was explicitly addressed during the design process so as to avoid possibly misleading representations while simultaneously providing access to the available data at the greatest possible level of precision. Given the overall difficulty of reconstructing travel data accurately, the order of visits is not taken into account in the current data model, and the journey as a whole (not the individual city visit or transfer) is thus taken as the basic unit of description for travel activity. The fact that the order of visits is not explicitly described in the data naturally also propagates to other information related to the relationship between traveller and travels, such as the age of the traveller at the time of his visit to a specific city.

With regard to the temporal uncertainty, travel start and end dates can be marked as missing or uncertain (and can include an estimation of the uncertainty span); geographic information can be entered at varying precision levels (in the prototype: city or country). While the existing temporal uncertainty of data is expressed in the temporal view, the representation of geographic uncertainty has not yet been integrated, and country-level visit information is currently not being visualized although its integration has been designed.

5. User Interface and Data Visualization

VIA's interface focuses first and foremost on the exploration of the dataset by means of a quick and flexible approach allowing the user to filter and manipulate the dataset and instantly view the results of such manipulation. VIA was therefore designed as a set of coordinated views[28], meaning that every element

28 Such an information visualization model is known as linked representations or as multiple and coordinated views. It is a collection of views in which interactions with one visual representation are immediately reflected in other "linked" representations. This model is commonly used when users need to deal with different data types simultaneously or handle data with complex relationships, such as spatio-temporal data.

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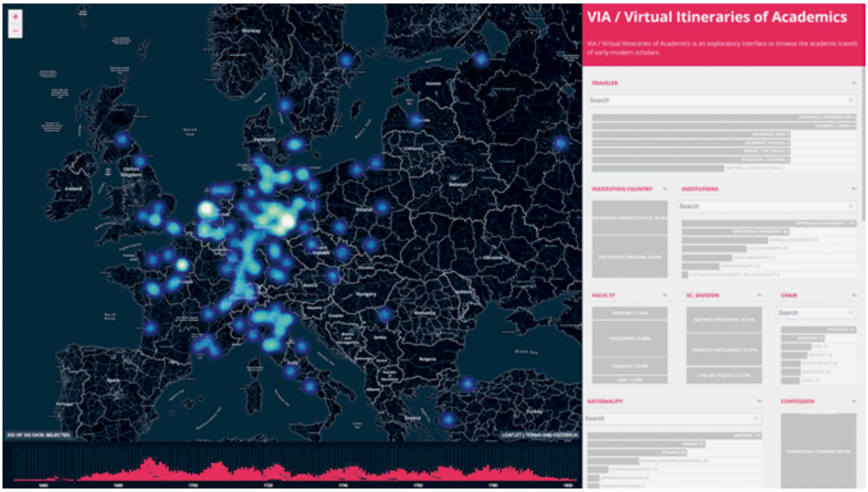


Fig. 2 VIA user interface mockup.

of the interface is simultaneously a view onto the dataset, showing the distribution of a particular value throughout it, as well as a filtering device allowing selections in regard to the underlying data to be made. For example, the “Institution (name)” widget not only shows how many travels were undertaken by persons from each institution (university), allowing users to see the distribution immediately and search for a specific origin, it also allows the data to be filtered in such a way that only travels by scholars of the selected institution are shown across the entire interface. When the user interacts with more than one widget, the displayed results correspond to the intersection of all active filters, thereby providing the possibility of creating customized queries. In other words, once one or more filters are activated, every element of the interface is updated according to the distribution of the filtered values. For example, if the user selects a faculty filter to show only travellers with affiliations e.g. to faculties of philosophy, the “Nationality” view shows the distribution of travels by nationalities limited to travellers affiliated with faculties of philosophy—as do the map, the timeline and all other widgets. This filtering is instantaneous for hundreds or even thousands of travels, and in case of databases featuring millions of records, it can be shifted to the backend for optimal performance. The majority of screen space is devoted to the geography of the travels. The geographic component is represented in a dynamic map showing the locations and relative popularity of visited cities for the selected journeys. The geographic view thus shows the spatial distribution of visits, with a heat-map used at lower zoom levels to show the proportionality of cities or areas and thus offer a better representation of the density of travel visits. When the view is zoomed in to

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country-level scale, it morphs into a marker-map so as to highlight the individual visits and allow better comparison of the relative popularity of cities. In both modalities, the area of markers is proportional to the number of (filtered) journeys including a visit to the respective city.

When a city is selected by clicking on it, a window pops up showing information on the travellers that visited the city together with the list of relevant institutions, people and events in the city during the selected time interval. Some features designed for the map view have not yet been implemented, e.g. a display of country-level information about visits or certain geographic filtering functionalities.

The timeline underneath the map shows the temporal information related to the travels. The objective in this case was to display the temporal distribution of journeys so as to highlight patterns in travel dates and other trends in travelling[29] while simultaneously being able to see the individual journeys and thus compare their lengths. To provide simultaneous access to aggregate measures (total travels during a given year) and individual journeys, a custom visualization was designed for VIA that shows the spans of every single travel in a compact form while also stacking them such that the height of the stack is representative of the total number of travels active during the given year. This method fundamentally merges the properties of a *Gantt chart*[30] and a histogram into a single compact timeline visualization. Being able to see the individual journeys and not just some form of aggregate measure makes it possible to not only visually comprehend the length of each journey, but also allows two different forms of interaction with the visualization: On the one hand, users can define a time span in order to filter the data, and on the other they can select an individual journey to obtain additional information. With regard to incomplete information and uncertain dates, the temporal visualization uses a transparency gradient to "fade" the travel span and thus symbolize the uncertainty related to start or end dates. Beside the travels, the timeline is also planned to eventually display certain contextual markers for important historical events in an enhanced version of the tool as well as allowing data

29 The timeline demonstrates the travel trends among the total number of travels, which should not be confused with travel popularity among academics. Travel trends refer to the development of the total number of travels, whereas travel popularity would require comparison with the development of the total number of academics (including non-travelling academics) during the same period. Since the total number of academics at the universities almost doubled during the eighteenth century, the overall popularity of academic travel actually decreased during the same period. For more on the development of academic travel popularity, see Jensen, Cosmopolitanism, see footnote 8, vol. I, 249–273.

30 A Gantt chart is a temporal bar chart used primarily for the display of project schedules. Clark Wallace, The Gantt Chart: A Working Tool of Management. New York 1922.

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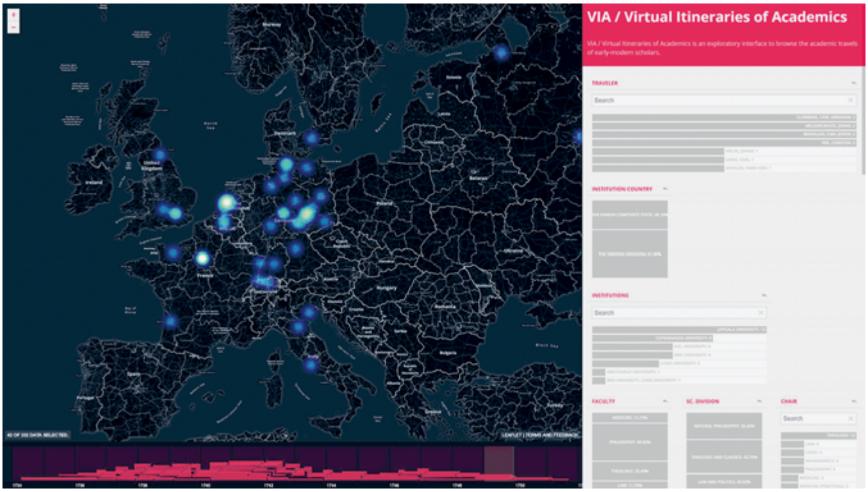


Fig. 3 Detail of a selection of the timeline as shown in the user interface.

brushing or animation functionalities to explore the temporal evolution of the underlying phenomena.

The third dimension of the data, i.e. the prosopographical attributes of the scholars and travels, are located to the right of the map in a scrolling sidebar designed to host the widgets related to the many attributes. The filtering functionality in this section is based on three different types of visualizations depending on the nature of the respective data: histograms for continuous numerical data, stacked bar graphs for categorical properties with few values (where the interest is mostly in the relative values), and bar charts for other categorical properties. While a selection of multiple values for a given property is possible in principle, the current interface allows only for the selection of adjacent values. A different selection mechanism supporting the selection of non-adjacent values has already been designed, but has yet to be implemented.

6. Initial Results and Further Possibilities

In the context of the initial case study, using VIA even in its current early development stage has made it possible to support, substantiate and challenge claims made in regard to Nordic academia during the eighteenth century and its placement and participation in the European learned world. Moreover, VIA's explorative features have also highlighted the potential of exploratory data analysis for provoking new research questions: What was previously unclear,

expected to be unimportant or not thought of at all can easily be tested thanks to the instantaneous adjustment of all categories.

By viewing the entire dataset, users can see that the intellectual geography of the Nordic academics was very much limited to Protestant north-western Europe, with epicentres around the newly reformed universities in Saxony and Prussia, the Dutch universities and the European scientific and cultural hotspots of Paris and London. On the one hand, this confirms the general notion of Scandinavian learned connections to German and, to a lesser degree, Dutch and London-Paris academia, but on the other hand it certainly also demonstrates the limitations of the general geo-academic reach of eighteenth-century Scandinavian academics. Whereas previous studies (often on individual scholars) have confirmed where scholars travelled to, it is a much more difficult task to convincingly demonstrate where they did *not* journey to. From the point of view of the Nordic academic traveller, Eastern Europe, northern Great Britain and the Iberian Peninsula were all blank areas on the map. This naturally leads to the following questions: Why did Nordic travellers prefer some places over others? What were the reasons for Nordic travellers visiting German universities and places of knowledge, but not Spanish or Scottish ones? Was it only a matter of confessional differences? Clearly not, since the Catholic universities on the Apennine peninsula also attracted a fair number of visits from other regions. Simply by visualizing all the travel destinations of Nordic scholars, we can begin asking new questions.[31]

Moreover, when we begin to break up this generalized view through the explorative features of VIA, further questions arise and new insights are obtained—for example the obvious differences in travel practices between academics from the four Scandinavian and two German universities. Compared with their peripheral Scandinavian peers—who during the first half of the eighteenth century were aware of and even stressed the need for foreign expertise and knowledge—it seems that the German academics had a lesser need for travel to foreign countries, as they were already tied culturally and intellectually to a dominant academic world. Another example is the importance that Dutch universities and Paris played for later Nordic professors of medicine, or the noticeable decline of the Dutch universities as a travel destination throughout the eighteenth century, which is not necessarily linked to a decline in quality at these universities, but more likely to an increase in quality at the domestic universities back home. A final example, of course, is the obvious attraction that the newly reformed universities in Halle, Jena, Leipzig, Wittenberg and (in part) Göttingen held for academics interested in the disciplines of law, theology and oriental languages, which seems to confirm the impact that the new thoughts

31 For a more detailed examination of the Nordic academics' travel patterns, see Jensen, Cosmopolitanism, see footnote 8, vol. I, ch. 6, vol. II, 89–136.

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and ideas of intellectual pioneers like Christian Thomasius, Christian Wolff and August Franke had on Scandinavian and Northern German scholars.

Initial results like these, together with the tool's tested capacity for visualization and exploration, suggest that a digital tool like VIA—despite still being in a work-in-progress stage—provides additional value to the work of historians in the digital age: Claims can be substantiated, past statements can be challenged or corroborated, and new research questions can be developed. The completion of such a proof of concept, however, also implies further development and potentially also further possibilities.

In the same way we began the development of VIA by asking the question "what would an ideal tool look like?", we intend to finish the first phase of our work by asking the same question. We believe that digital tools like VIA hold great potential to help in formulating and answering research questions, and the possibilities for further development are manifold. As of now, the project has produced a promising proof of concept that needs to be developed further and finalized for internal project use, but could also be expanded to public use. These are obviously two very different goals: While the former has well-known data sets and a formulated use in mind, the latter features more unclear usage scenarios and—most importantly—also requires the possibility for public users to upload their own projects and data sets. Alternatively, a curator would be needed.

With regard to the prototype and its specific use cases (besides the planned improvements listed in this paper), one key to enhancements would be the quantity and variety of the data provided. A possible feature that comes to mind would be additional data on travel funding, which would enable the tracking of changes concerning funding for individual disciplines and facilitate analysis of possible correlations between scholarships and travel destinations. Expanding in a different direction, the tool could be furnished with additional views, for example a "network" view that would reveal the relations between travellers or travels (e.g. co-presence networks), thereby offering new insights into the nature of the data. In regard to a more general public version, one might think of integrating VIA with other prosopographical databases like Early Modern Letters Online (EMLO) and other data samples provided by researchers. In this case, VIA could be extended to deal not only with academic travel data but all sorts of other prosopographical data on early modern academics and scholars as well. Such continued development is not unachievable, but would naturally require some rethinking in terms of design and use.

Ultimately, VIA could become a tool that goes beyond individual research data and would thus help researchers compare and connect their findings. By doing so, it would enable today's scholars to reconstruct the paths of their predecessors, see who and where they potentially met, and thus contribute to overcoming a major restriction imposed by the absence of direct transmission.

Marion Romberg

Maps, Timelines, Search Features, and Indices

Digital Tools in the Continent Allegories Database

Independent of the actual research question, the presentation, interpretation, and appreciation of historical contexts constitute the basic craft of any historical work—be it in history, art history, social history, or archaeology. For these pursuits, we use a great variety of sources and methods. The latter term refers not only to theoretical analysis models and concepts, however, but also quite specifically to questions of the organization of research, the dissemination of research results, the comprehensibility of data and, ultimately, its reusability in different contexts. Digital methods and formats are increasingly being used for the analysis and/or presentation and dissemination of results.

In 2012, a research team began work on a project whose primary objective was to shed light on a phenomenon specific to a historically defined region reaching from the rivers Moselle and Main (up to the city of Fulda) in the north across the mountain ridge of the Erzgebirge at the foot of the Trzebnickie Hills above Wrocław to the present borders of the Republic of Austria as well as South Tyrol in the south, extending to the former border of the Holy Roman Empire in the east and to the Rhine in the west. The research was focused on the iconography of the four continents as it appeared in the media of frescos, stucco, sculpture etc., reaching its peak on the walls and ceilings of Southern German rural churches and chapels around the middle of the 18th century. The first objective was to conduct a systematic survey of bibliographical research, site visits and photographic documentation.[1] The second objective was to create not just a large data pool, but to develop an interactive database with various means of accessing the data (maps, timeline, grids). The project and database were funded by the Austrian Science Fund (FWF), and the work spanned the years 2012 to 2016.

1 Research on parish churches of the Baroque period has been neglected by art historians and historians so far. Cf. Peter Hersche, Die soziale und materielle Basis des „gewöhnlichen barocken Sakralbaus“. In: Frühneuzeit-Info, 6 (1995), 2, 151–171; Marion Romberg, Die Welt im Dienst des Glaubens. Erdteilallegorien in Dorfkirchen auf dem Gebiet des Fürstbistums Augsburg im 18. Jahrhundert, Stuttgart 2017, 89–92. Recently, this topic has been met with renewed interest; see the forthcoming conference proceedings Martin Mádl / Herbert Karner (ed.), *Die barocken Pfarrkirchen und ihre Dekoration*. Prague: Artefactum 2019.

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In the following paper, I will focus on a particular instance of these continent allegories with the aim of providing an example of how to use the database for research.[2] This narrative strand will be interspersed with technical explanations of tools integrated into the database; these insertions are set in *italics*.

1. Basics: Gathering Data and Developing the Database

The project team made up of historians and art historians approached its subject in a new and systematic manner. Firstly, we selected a clearly defined geographic area consisting of the greater part of the Southern Holy Roman Empire and featuring a large concentration of Baroque sites. Secondly, we decided to focus on continent allegories in immovable media, i.e. those installed as frescos, stucco work, paintings, and sculptures within abbeys, palaces, parks, gardens, townhouses, and—most importantly—churches.[3] Portable artifacts like faience objects, book illustrations, maps, atlases, prints, or terracotta figurines were not included in the research corpus for the sake of homogeneity. Few such movable artifacts have remained in their original location respectively within the contexts for which they were intended, and their provenance is often difficult or impossible to reconstruct. In this they differ significantly from allegories of the four continents on immovable media, for which we are mostly able to reconstruct the social and cultural contexts in which they originated as well as the spatial and functional conditions prevailing when they were conceived, viewed, interpreted, and understood. Thirdly, the time frame for our investigation extended from the late sixteenth to the mid-nineteenth century, with the mid-eighteenth century forming the key period.[4] The survey conducted by the project team identified over 400 relevant instances of continent allegories within the study area. A database was subsequently developed to facilitate the systematic and detailed analysis of all identified instances, and it is now available to the public at http://continentallegories.univie.ac.at.

2 Further examples can be found in the conference proceedings: Wolfgang Schmale / Marion Romberg / Josef Köstlbauer (eds.), The Language of Continent Allegories in Baroque Central Europe. Vienna 2016 as well as in the journal article by Marion Romberg, Continent Allegories in the Baroque Age – A Database. In: Journal18. Issue #5: Digital Mapping & Eighteenth-Century Visual, Material, and Built Cultures, Spring 2018 (http://www.journal18.org). This essay draws in part on the two mentioned publications.

3 Only objects remaining in their original locations were included.

4 Cf. Marion Romberg, Data based analysis of the continent-allegories in Southern Germany with special focus on the prince bishopric of Augsburg. In: Schmale / Romberg / Köstlbauer, Language, see footnote 2, 87–106.

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The project team followed a sequence of steps and protocols in the process of gathering the data. Firstly, members of the project team personally visited all instances of continent allegories identified in a preliminary survey. Both the respective depictions of the four continents as well as the entire iconographic and architectural context they are situated in were thoroughly documented by means of digital photography and descriptions. Secondly, the database structure and guidelines for record management were developed using the Iconclass system as discussed below. The data are physically stored on a server belonging to the University of Vienna to guarantee long-term accessibility and permanence of links. The hypermedia environment specifically developed for the project by Julian Rödelius (Vienna) provides access to the detailed descriptions of the objects along with the high-quality images and corresponding details. Each record contains information about the respective object's chronology, restoration, and primary source material in respect to the image within its architectural context and is complemented by bibliographical information. All objects are navigable via subject indexing and hyperlinks.

2. Using the Database for Analysis

When thinking about allegorical depictions of the four continents in the Baroque era, the imposing fresco by Giambattista Tiepolo in the stairwell of the residence of the Bishop of Würzburg comes to many people's minds.[5] Most are unaware, however, that the iconography of the continents is among the most popular allegories of the Baroque. The continents became part of the decoration of movable media such as etchings, maps, and sculptures as well as—our project's primary focus—of immovable media like frescos or stucco. Originating in Italian palazzi and further promoted through Dutch series of etchings of the four continents[6], they found their way into religious decoration schemes and into the arts north of the Alps.[7] This geographical dissemination can be reconstructed using the database.

5 Cf. Marion Romberg, Würzburg (Würzburg), Fürstbischöfliche Residenz, Treppenhaus. In: Wolfgang Schmale (head of project): Erdteilallegorien im Barockzeitalter. Vienna, accessed 03.11.2018, https://erdteilallegorien.univie.ac.at/erdteilallegorien/wuerzburg-wuerzburg-fuerstbischoefliche-residenz-treppenhaus.

6 Romberg, Welt, see footnote 1, 29–34.

7 One of the first known examples to the North of the Alps can be found in Eisenerz. It is made from the etching series of Jan Sadeler the Older and Dirck Barendsz. Josef Köstlbauer und Marion Romberg, Eisenerz (PB Leoben), Heiliggeist-Haus. In: Wolfgang Schmale (head of project): Erdteilallegorien im Barockzeitalter, Vienna, accessed 03.11.2018, https://erdteilallegorien.univie.ac.at/erdteilallegorien/eisenerz-pb-leoben-heiliggeist-haus.

Both the first and last continent allegory within the investigated area can be found in South Tyrol. In 1583, the Italian artist Pietro Maria Bagnatore painted the oldest work in Castle Velthurns using the series of the four continents by Jan Sadeler the Older as a model.[8] Almost three hundred years later, in 1858, we find the last Baroque work depicting the continents in the parish church of Albeins.[9] After first appearing in 1583, the iconography had spread to 13 buildings by 1690 (Fig. 1a). The dissemination subsequently picked up speed, with 49 new sites in 1720 (Fig. 1b) and more than three times that many by the middle of the 18th century (Fig. 1c), before slowing down by the end of the 1700s and spreading out to the valleys of South Tyrol around the 1850s. Used at first almost exclusively as an element of manorial decoration programs (on the map: palace/townhouse = diamond; monastery = full circle), depictions of the continents began to flourish in the 18th century. This also involved a remarkable vertical transfer as such allegories expanded from manors and palaces to parish churches (triangle). The database map visualizes this not only geographically, but also marks dissemination hotspots and gaps while at the same time differentiating by building type.

From the 1730s onwards, the iconography increasingly became part of the pictorial program of village churches and chapels (1690: 2, 1720: 10, 1750: 66, 1770: 158, and finally 1800: 209) (Fig. 2). The majority of these can be found between Upper Swabia and Lower Bavaria. The empty spots are concentrated in the eastern parts of the Austrian hereditary lands[10] as well in the Protestant regions of Württemberg and parts of Franconia.[11]

The map interface (Figs. 1 & 2)

A spatial representation in the form of an interactive map ("Karte") shows the political and administrative divisions of Europe from the sixteenth to the

8 Josef Köstlbauer, Velthurns (Prov. Bolzano), Schloss. In: Wolfgang Schmale (head of project): Erdteilallegorien im Barockzeitalter, Vienna, accessed 24.12.2018, https://erdteilallegorien.univie.ac.at/erdteilallegorien/velthurns-prov-bolzano-schloss.

9 Josef Köstlbauer, Albeins (Prov. Bolzano), SS. Hermagoras und Fortunatus. In: Wolfgang Schmale (head of project): Erdteilallegorien im Barockzeitalter, Vienna, accessed 24.12.2018, https://erdteilallegorien.univie.ac.at/erdteilallegorien/albeins-prov-bolzano-ss-hermagoras-und-fortunatus.

10 Peter Hersche already pointed to the absence of the "ordinary Baroque" for the territory of the Austrian hereditary lands. This correlates with the white spots in the dissemination of the continent allegories. In these areas, use of the continent iconography was limited to the old orders of the Benedictines, Augustinian canons, and Cistercians, who used them within the pictorial programs of their newly built monasteries, as well as the nobility, who employed it in their palaces. Peter Hersche subsumed second- and third-class churches in his use of the term "ordinary Baroque". Cf. Hersche, Basis, see footnote 1, 154; Romberg, Welt, see footnote 1, 41.

11 Here the iconography can be found primarily within secular buildings and pulpits.

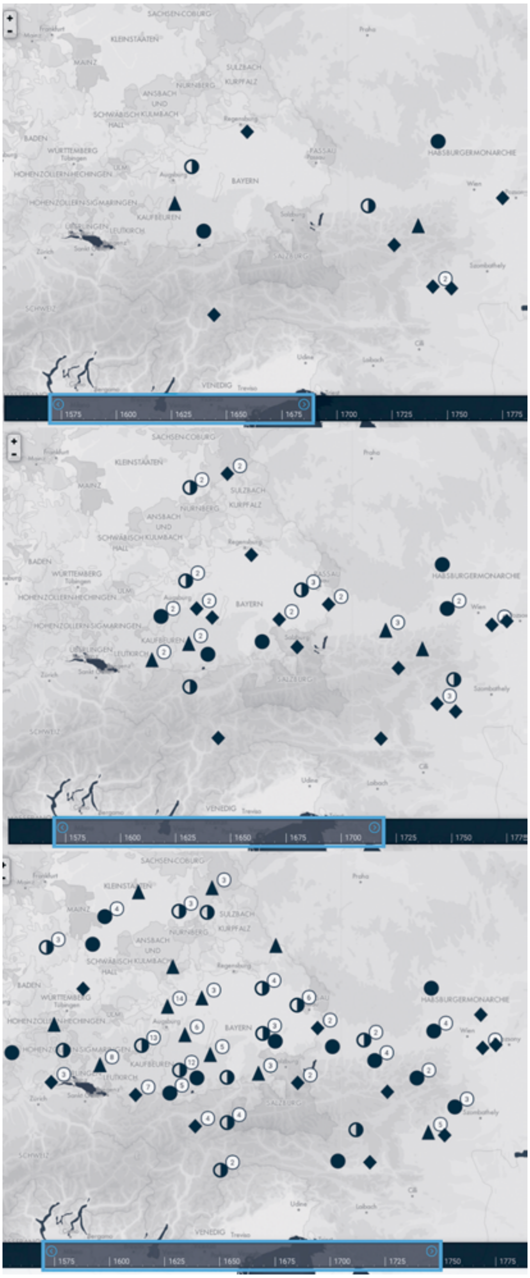


Fig. 1 Screenshots from the map interface – dissemination of continent allegories in 1690 (a), 1720 (b), and 1750 (c).

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Fig. 2 Screenshots from the map interface – dissemination of continent allegories in parish churches in the years 1690, 1720, 1750.

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nineteenth century as well as in the present. The map, for which our programmer used Leaflet (an open-source JavaScript library for mobile-friendly interactive maps), can be navigated by means of the building icons on the map, a timeline, and a search box for artists and places. The icons on the map denote building types: castles, palaces, abbeys, abbey churches, churches, chapels, and other types of locations. To limit the number of different symbols for the benefit of visual clarity, more than one building type is subsumed under certain icons, such as churches/chapels or palaces/town houses. By clicking on an icon in the box labeled "Legende", the user can quickly display only the desired type of buildings, and results can be further narrowed down to specific points in time using the timeline. Figures 1 and 2 demonstrate these options for village churches and the years 1690, 1720, and 1750. It is also possible to focus only on the artists working in a specific area and time.

In order to determine the exact location of each site, we used the satellite view of Google Maps to obtain the necessary GPS data, then added it manually to each entry in the category "Orte". This causes the corresponding icon to appear on the interactive map as well as on a small map included with each entry that provides the user with immediate information on the actual location of the site. This step was necessary since the digital single-lens reflex camera we used did not add GPS information to the images automatically (as is common with smartphones). Moreover, we needed only a single precise GPS reading to pinpoint each site's location on the map.

Finally, the historical dimensions of the map are derived from Euratlas, a commercial website that provides standardized historical maps depicting the political situation at the end of each century.[12] *As our timeline ranges from the sixteenth to the nineteenth century and our research area focuses on the Holy Roman Empire, we purchased four maps and implemented them accordingly. These maps, however, only show the borders of territories at a given point in time (the turn of each century) and it is not possible to zoom in to them; doing so results in the map view switching from the historical map to the current map.*

Towards the end of the dissemination process, for example, the continent allegories reached a small chapel in the cemetery of Bayrischzell, a village in Upper Bavaria. In the choir of this chapel is a small round fresco from 1785 (Fig. 3). Framed by a wreath, it shows the personifications of the four continents adoring the Virgin Mary, who is sitting in front of a cross atop a fountain. Water flows from spouts in the fountain and is caught in bowls by the four continents, who

12 See the Vector and GIS Maps section on the Euratlas website for further information on how Euratlas creates its maps as well as the employed references and primary sources: https://www.euratlas.net/shop/maps_gis/index.html [24.12.2018].

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are kneeling or standing on green grass around the fountain. In the foreground on the right, we see Europe clothed in a long dress and red coat, adorned by a crown. Immediately behind her stands the black-skinned personification of America wearing a blue-white feather skirt and blue feather crown. On the other side of the fountain, Asia is seen kneeling in the foreground analogous to Europe, dressed in a blue robe and red coat, wearing a turban. Behind Asia stands Africa, almost nude, paying his respects to Mary. He is also dark-skinned and wears a turban and golden bracelet. Iconographically, the artist combined two Mariological motifs: the *Mater Dolorosa* and the *Fons gratiae*. The motif of the so-called *Mater Dolorosa* (Our Lady of Sorrows), characterized by the seven swords of sorrow piercing Mary's chest (LK 2:35), constitutes a visualization of her misery, her motherly pain, and her compassion for her crucified son. The *Fons gratiae* motif developed in Byzantine medieval art and refers to Psalm 36:10. It became popular in Western art through the collection of miracles of Mary written by the monk Agapios Landos and published in Venice in 1641.[13] As a whole, the choir fresco is linked to the miraculous image of the *Mater Dolorosa* on the main altar of the chapel below. This statue of mercy initiated a pilgrimage to Bayrischzell in 1733 and was placed in the newly built chapel in 1785. The pilgrims mostly came from nearby areas and are referred to in the nave fresco depicting Mary as the savior of a ship in distress. The pilgrims—or rather members of the local parish[14]—are shown standing in the ship and imploring Mary to help.

The images (Fig. 3)

The digital images of the continent allegories and their visual and architectural contexts are central to the database. In total, it contains more than 6,000 .jpg files selected from over 100,000 photographs taken at the sites. Although we only used photos taken by the team, we had to obtain permission from each affected property owner. In the written contracts drawn up, it was necessary to prohibit downloading of the images in order to obtain permission to present them in high resolution and in perpetuity in the database.

Each entry in the continent allegory category features an attached gallery of images including detailed close-up shots as well as panoramic views of interiors and exteriors of the locations. These images are always arranged in a standardized sequence so as to facilitate orientation.

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13 For the connection between the continent allegories and the *Fons gratiae* motif, see Romberg, Welt, see footnote 1, 436f.

14 Cf. Hermann Bauer, Corpus der barocken Deckenmalerei in Deutschland (CbDD). Band 2: Landkreise Bad Tölz-Wolfratshausen, Miesbach und Garmisch. Munich 1981, 460.

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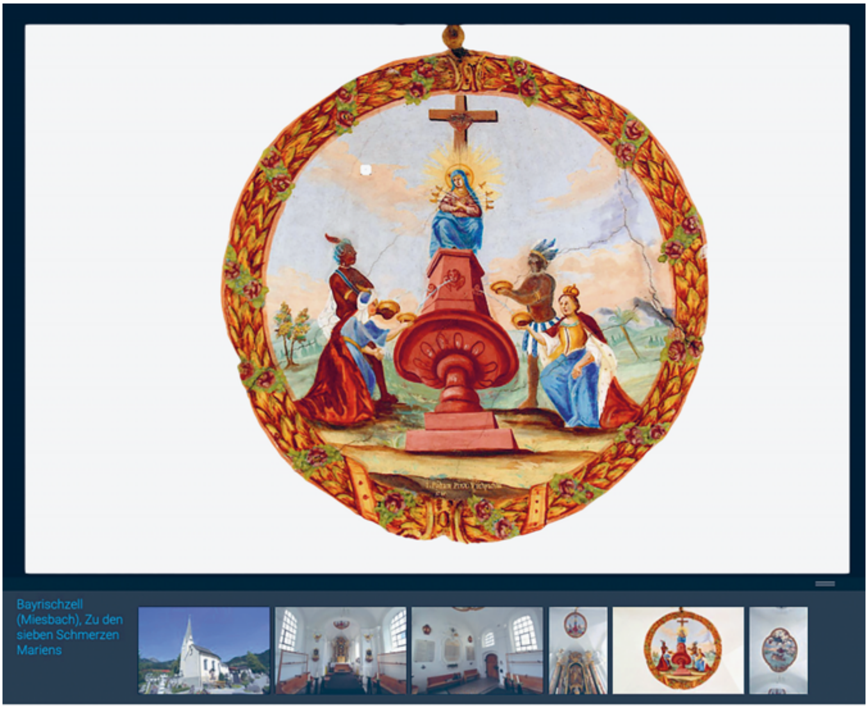


Fig. 3 Screenshot of the picture gallery.

Artist signatures, if present, are shown separately in close-up shots. By browsing through such a gallery, users are provided with a comprehensive idea of the respective location as well as the significance and function of the continent allegories in its specific context. Annotations within the images explain motifs and link panoramic shots to close-up images or to photographs of other paintings, drawings, or prints used as models.

The artist responsible for the painting in Bayrischzell was Johann Baptist Pöheim, whose signature *I. Pöham Pinx: Vischpachau 1785* can be found in the choir fresco. Since its creation in 1785, the chapel has been renovated five times[15], and the chapel itself replaced a Gothic ossuary. The church at Bayrischzell was the filial church of the monastery of Fischbachau, which was incorporated into the Benedictine monastery of Scheyern. At the time of the

15 In the years 1827, 1881, 1915, 1952, and 1979/1980, cf. Marion Romberg, Bayrischzell (Miesbach), Zu den sieben Schmerzen Mariens. In: Wolfgang Schmale (head of project): Erdteilallegorien im Barockzeitalter, Vienna, accessed 03.11.2018, https://erdteilallegorien.univie.ac.at/erdteilallegorien/bayrischzell-miesbach-zu-den-sieben-schmerzen-mariens.

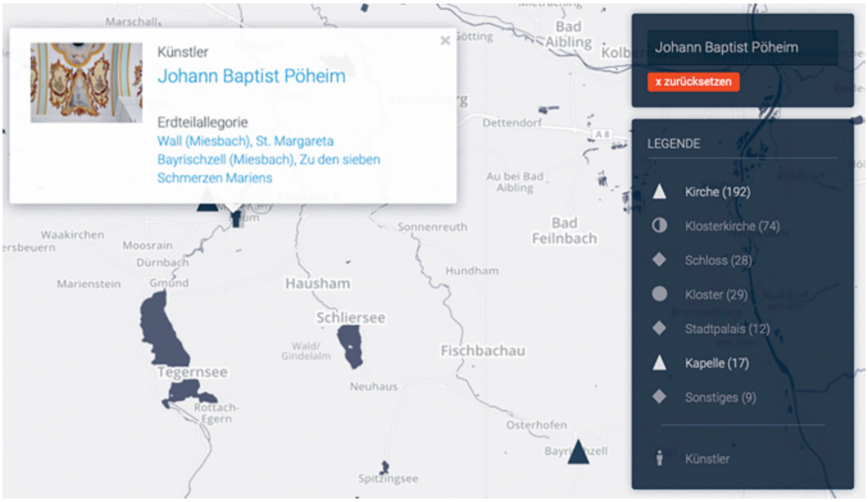


Fig. 4 Screenshot of the map interface, filtered by artist name.

fresco's creation, Erhard Landmann had held the office of curate since 1779 and was responsible for overseeing the construction of the chapel. Little is known about him or the artist, however.[16] Born in 1752, Pöheim took over his father-in-law's workshop in Aibling in 1785, becoming a permanent resident there until his death in 1838. During his career, he used the iconography of the four continents only once more, in the church at Wall in 1784 (Fig. 4). All such basic information as well as details on the relationships are included in the database for each continent allegory on three datasheets (Fig. 5).

The structure of the database: categories (Fig. 5)

The core of the database is comprised of three different categories of entries that are used to define the corpus and group the various types of data:

1. *"Erdteilallegorien" (continent allegories) contains all digital images, basic information, descriptions, and analyses.*
2. *"Orte" (Sites) contains basic information on the buildings and places where continent allegories are to be found. This includes an overview of the respective building's history, information on its historical and current political and administrative affiliation, and an outline of pilgrimage history where applicable.*
3. *"Personen" (Persons) includes all artists and patrons involved in the production of the examined continent allegories.*

The relationship between these three categories is as follows: while each continent allegory is always assigned to exactly one specific site, several continent allegories

16 Cf. Bauer, CbDD, see footnote 14, 460.

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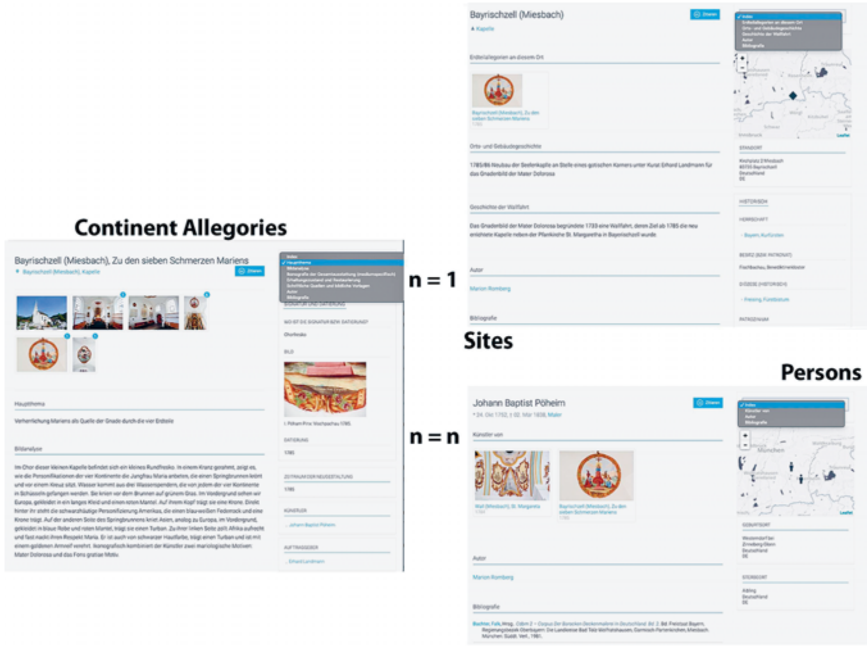


Fig. 5 Screenshots of the three key categories and their relationships.

can be located in different places at the same site, for example in a monastery or palace. The connection between people and continent allegories is based on an "n:n" ratio. This means that for each continent allegory, several artists as well as multiple principals can be involved with differing degrees of intensity or significance along the way.

When using such an iconography, artists drew from entire compositions and/or individual elements of their own *inventio* as well as from the oeuvre of colleagues. This form of reuse is characteristic of a serial image source, wherein the adjective "serial" should not be understood in terms of the multiplying reproduction of a prototype. Rather, in early modern times, artists drew on an iconographic tradition of methods of personifying the four continents, including the four-figure scheme and the use of exotic elements. In the case of Pöheim's painting at Bayrischzell in 1785, the iconography of the four continents had already progressed over 241 years.[17] Reused and newly created elements can be easily identified using the database, as it assists comparative

17 See for the tradition Erich Köllmann / Karl-August Wirth, Erdteile. In: Reallexikon zur Deutschen Kunstgeschichte. 5, Stuttgart 1967, 1107–1202; Sabine Poeschel, Studien zur

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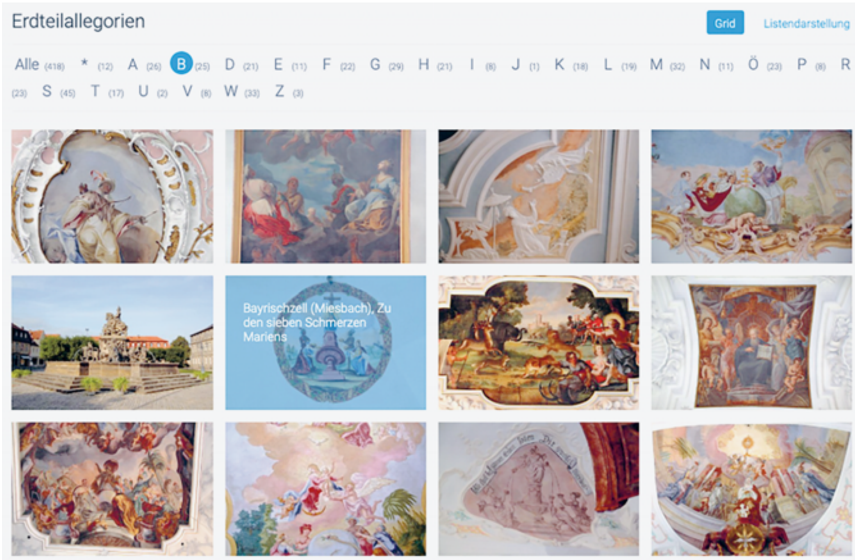


Fig. 6 Screenshot of the "Continent allegories" index interface.

approaches by various means: the index of the continent allegories (Fig. 6), Iconclass (Fig. 7), the search dialog (Figs. 8 & 9), and the timeline (Fig. 10).

The index of the continent allegories (Fig. 6)

The index of the continent allegories is one of several indices combined in the interface "Index"; the other indices are persons, sites, and taxonomies. In contrast to the latter three, which are listed only alphabetically, the allegories can be displayed either in a grid or in an alphabetical list. The grid shows a preview image of each of the continent allegories, allowing the user to browse them visually and easily identify similar compositions.

Using the index "Erdteilallegorien" displayed as a grid, users can quickly browse the thumbnails of all continent allegories included in the database. When looking for similar compositions to the one in Bayrischzell, for instance, the chapel in Bernbeuren may catch the user's eye. In contrast to Bayrischzell, however, the Bernbeuren allegory is not only carried out in grisaille but also refers exclusively to the *Fons gratiae* motif. Here Mary and the child on her lap are actively passing the water of mercy to the continents and are thus depicted as the source of mercy for the entire world. Another means by which all *Fons*

Ikonographie der Erdteile in der Kunst des 16.-18. Jahrhunderts. Munich 1985 and Romberg, Welt, see footnote 1.

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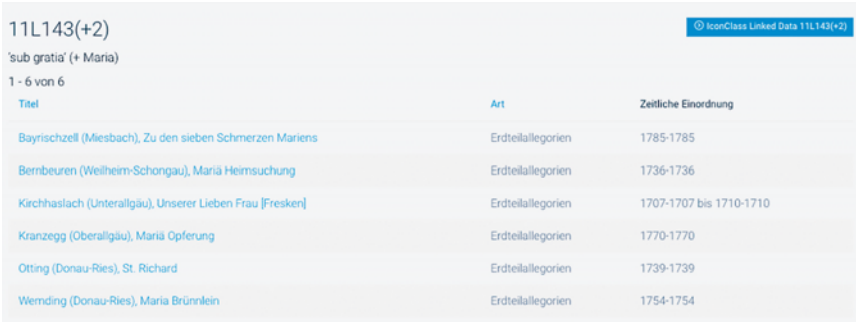


Fig. 7 Screenshot of the "Iconclass" index interface.

gratiae images can be found is provided by the iconographic classification system Iconclass, whose codes are assigned to each continent allegory in the right-hand column of each datasheet. Iconclass allows the user to display all continent allegories featuring a specific motif like *Fons gratiae* (11L143(+2)) with a single mouse click.

Iconclass (Fig. 7)

The taxonomies are a list of all Iconclass codes assigned within the database. The iconographic classification system Iconclass is intended for description and classification of pictorial data by art historians and is used by institutions throughout the world as a standardized tool. First published in print by the Netherlands' Royal Academy of Arts and Sciences between 1973 and 1985, it is based on a hierarchical system of codes referring to themes, persons, objects, ideas, and events depicted in images. On the one hand, the use of Iconclass allows easy comparison between images contained in the database. On the other hand, it also permits the database to be used independently of language and facilitates integration with other scientific databases or meta-databases. The Iconclass taxonomy is used to describe individual continent allegories and their elements as well as the entire iconographic contexts in which the specific depictions are situated. We thus distinguish between two levels of implementation: Iconclass Context and Iconclass. The former refers to the iconography of the overall interior program to which each individual continent allegory belongs. Only the main themes of the pictorial program accompanying a representation of the four continents, such as "Mary as savior of a ship in distress," are coded. The second set of Iconclass codes focuses on the images of the four continents themselves and goes into much more detail in regard to the iconography. Individual attributes, gestures and topics are recorded. Our team member Christine Engelke was responsible for the implementation, applying 1,400 Iconclass codes a total of 13,400 times within the database.

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We can see right away that the oldest item in the list shown in the example in Fig. 7 is the Church of Our Dear Lady in Kirchhaslach.[18] These continent allegories are among the very first examples to be found in a village church, created between 1707 and 1710. Further research revealed that the church's extensive Mariological program—which extends across smaller and larger ceiling levels throughout the entire ceiling of the three-aisled church—was actually documented in text and pictures in a book initially published in Augsburg in 1714 and then again in a second edition in Mindelheim in 1726 under the title "*Gnaden-bräu … to Kirchhaslach …*"[19]. This booklet was not only used conceptually as a template for other church spaces, but also contributed significantly to the dissemination of the image itself—or as Cornelia Kemp concluded, its effect is "comparable only to the popularity of the Symbolographia by J. Boeschius [Augsburg 1701 and Dillingen 1702]".[20] Comparing Kirchhaslach to the other locations in Fig. 7, we immediately notice that besides the two aforementioned *Fons gratiae* combinations, only one further item in the little church of Maria Opferung in Kranzegg relates directly to Kirchhaslach. The artist in Kranzegg, much like the one in Bernbeuren, more or less copied the employed template. Bayrischzell is an indirect successor in which the fountain figure of Mary dispensing water is replaced by the Mother of Sorrows, with the merciful water flowing directly from the fountain. The other two sites, namely the parish church of St Richard in Otting and the pilgrimage church of Maria Brünnlein in Wemding, merely followed the tradition of Kirchhaslach, with Wemding probably representing the most expansive realization of this motif.

The database also supports visualization of the geographical relationship of the recorded instances by displaying them on the map. This option is provided by the search interface, which connects to the map interface. Users can simply select the desired Iconclass code from the dropdown menu or enter a keyword into the Iconclass full-text search in the search interface (Fig. 8).

Furthermore, the innovative influence of an artist can be evaluated by comparing him to other artists and works from the same timeframe, or by looking at the dissemination of an iconography in a specific medium such as pulpits.[21]

18 Marion Romberg, Kirchhaslach (Unterallgäu), Unserer Lieben Frau [Fresken]. In: Wolfgang Schmale (head of project): Erdteilallegorien im Barockzeitalter, Vienna, accessed 03.11.2018, https://erdteilallegorien.univie.ac.at/erdteilallegorien/kirchhaslach-unterallgaeu-unserer-lieben-frau-fresken.

19 Cf. Gnaden-Gebäu Der Ubergebenedeyten Mutter Gottes, Und Allzeit Jungfrauen Maria, Wie Vermahlen zu Kirchaßlach. Augspurg: Labhart 1714, 66, accessed 24.12.2018, https://nbn-resolving.org/urn:nbn:de:bvb:824-dtl-0000144651.

20 Cornelia Kemp, Angewandte Emblematik in süddeutschen Barockkirchen. Munich 1981, 121–122.

21 Here selecting the filters "Anbringungsorte" (placement) and "Kanzeln" (pulpits) in the search interface.

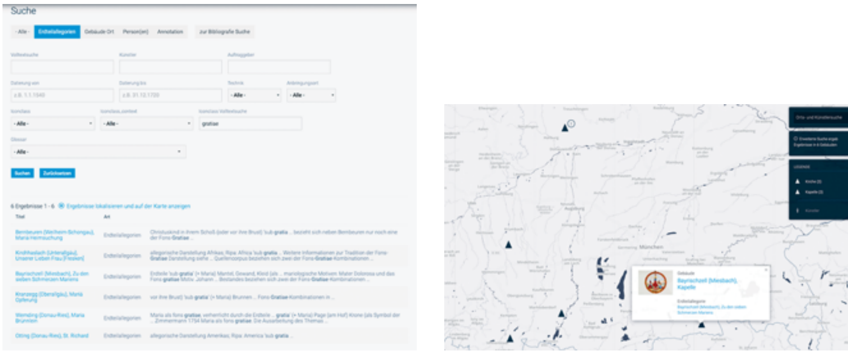


Fig. 8 Screenshots of the search interface (filtered by Iconclass full-text search for “gratiae”) and the map interface.

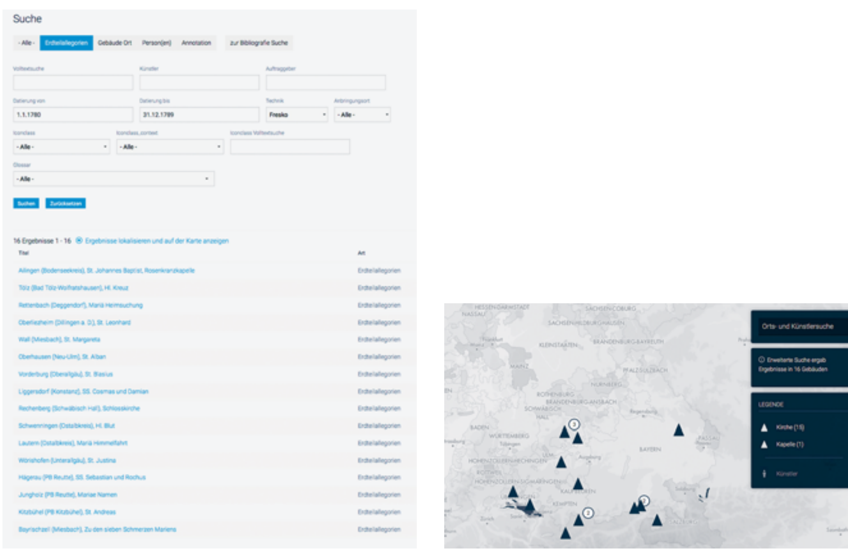


Fig. 9 Screenshots of the search interface (filtered by date 1780–1789 and technique “Fresko” [frescos]) and the map interface.

This can be done by using either the map’s timeline, the search interface (Fig. 9), or the timeline interface, which allows for easy chronological navigation of the records. In the timeline interface, entries are arranged according to their original period of creation.

The timeline interface also facilitates easy and quick access (Fig. 10). In the 1780s, 24 continent allegories were carried out in different media, 16 of them as frescos. Comparing Pöheim’s continent allegories to works created, for

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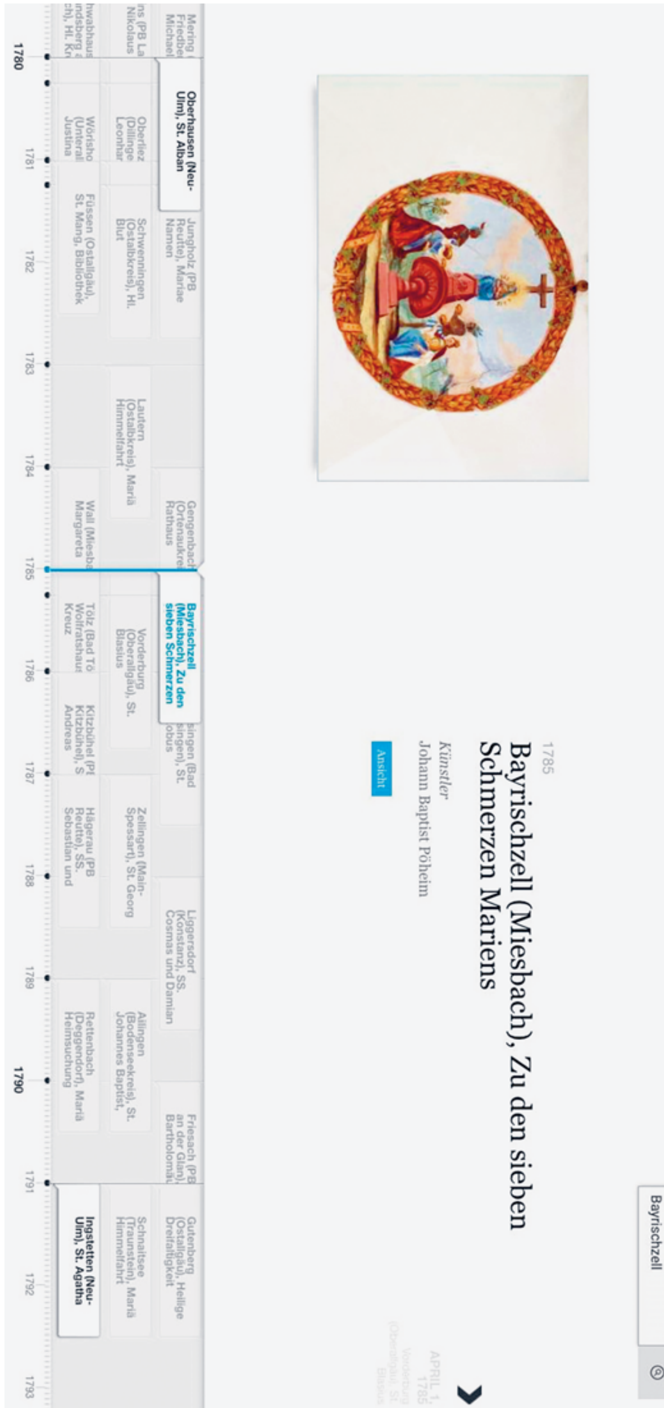


Fig. 10 Screenshot of the timeline interface for the period 1780–1791.

example, by Konrad Huber in Oberhausen in 1781 or Ingstetten in 1791, we see that they differ significantly in their artistic expression. Huber, who was educated at the academy of Stuttgart, showed his skill by applying state-of-the-art classical principles, while Pöheim copied a composition from the beginning of the century. As a result, it is impossible to place the continent allegories in a chronological order and, by extension, to provide proof of a progression of knowledge about the flora and fauna of the other continents. Ultimately, how narratively reduced—i.e. how 'barbaric vs. civilized' or 'common vs. exotic'—an individual continent allegory turned out to be depended on the circumstances of the specific building as well as the knowledge, educational and/or socio-economic background of the artist and the client.

The search interface (Fig. 8 + 9)

This interface allows the user to conduct full-text searches that can be specified and filtered as desired. The specifications are predefined by the taxonomies included in the three categories, such as the positioning of the artwork in the room, the type of building, the historical diocese, Iconclass codes etc. Search results are listed by relevance and can be displayed on the map as well. The search interface thus offers the possibility to search according to different interests and compare the occurrence or prevalence of specific attributes.

3. Conclusion: Breaking New Ground

Looking back at the beginning of the project in 2012, our objective was not merely to create a large data pool, but to create an interactive database with various means of accessing the data (maps, timeline, grids). The heart of the database is the map, which also serves as the primary interface to access its contents. This unique design highlights the pioneering approach of this project, with the iconography used as the basis for the arrangement of data rather than organizing along the lines of artist, geography, time period, or medium.[22] This

22 As do other ongoing projects that contribute in their respective national approach to an understanding of the development of Baroque mural paintings. Regarding Germany, see "*Corpus der barocken Deckenmalerei in Deutschland*" (University of Munich, Department of Art History); concerning the Czech Republic, see "*Ceiling Painting in the context of monastic architecture in Czech lands*" (Prague, Academy of Sciences, Department of Art History); for Hungary, see "*Development of a database and iconographical index for baroque frescos*" (Budapest, Pázmány Péter Catholic University, Department of Art History). The missing link between the two latter examples is a systematic survey of Austrian mural paintings in the Baroque era, which would provide a thorough overview of the cultural transfer process within the Habsburg monarchy. Equally desirable would be the definition of common standards for digital dissemination.

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gives researchers the opportunity to see a corpus of artworks that have never been brought together in the same interface or publication despite sharing obvious connections. Moreover, the project represents a successful collaboration between art historians and historians, both of whom share an interest in the subject matter but have often approached it with differing methodologies. Historians have examined the continent allegories and similar iconographies in print publications with an interest in their sociohistorical and discursive meanings.[23] By contrast, art historians have focused on images in situ with a concern for artistic practice, iconography, and authorship. By bringing together a team of both historians and art historians, the varying interests and concerns of the two groups have been merged—and the tools provided by our interface allow both groups to tackle the project according to their own research questions while simultaneously being exposed to new perspectives outside of their respective disciplines.

To conclude this essay, I am strongly in favor of going digital, yet one of the major problems of third-party-funded projects must be addressed in future. I am referring to the challenge of ensuring long-term availability of the produced databases and the durability of their tools. A problem we had to solve in regard to our project involved co-financing a server in 2013 which is now owned by the University of Vienna's Faculty of Historical and Cultural Studies. In the spring of 2018, just two years after going public, the continent allegories database and approximately 348,000 EUR of funds spent on its development were nearly flushed down the drain when an order was received from the University's central IT service to either shut it down or to upgrade the server and implement a new security system, which ultimately led to a reset of all databases saved there. Luckily, due to Beate Pamperl, a highly motivated IT staff member at the Department of History, as well as my own availability and personal know-how, the database could be reinstalled from a backup and all major problems were ultimately resolved. Data availability is an issue that needs to be addressed by hosting and funding institutions alike, however. Long-term infrastructure and management for third-party-funded databases must be guaranteed for the time after the initial project period. Such considerations should be part of the long-term digital strategy of the involved institutions, as a lack of such a guarantee could entail losses of data for future generations.[24]

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23 For a summary, see Romberg, Welt, see footnote 1, 83–88.

24 Something similar happened to a pioneering and avant-garde hypertext system about the time of Charles V named "Past Perfect" (http://pastperfect.at, accessed 24.12.2018). It was developed by a team likewise headed by Wolfgang Schmale at the University of Vienna; it went online 14 years ago and offline 10 years later. Although its texts are still accessible online, the original database interface is lost. For the texts, see https://www.univie.ac.at/hypertextcreator/pastperfect/site/browse.php?arttyp=k&l1=2 (accessed 24.12.2018), and for a screenshot of the original database, see Wolfgang Schmale / Martin Gasteiner / Jakob Krameritsch / Marion Romberg (eds.), E-Learning Geschichte. Vienna 2007, 135–144.

Claudia Resch, Dario Kampkaspar

DIGITARIUM

Unlocking the Treasure Trove of 18th-Century Newspapers for Digital Times

1. Introduction: Historical German Newspapers in Digital Transition[1]

Only a few decades ago, the value of historical newspapers as sources for academic research was still subject to debate among scholars, some of whom criticized the lack of objectivity often evident in the reporting from earlier periods in history. The perception that these sources were biased and lacked critical distance led scholars to question their suitability as legitimate sources of academic and historic information. Today, as perspectives on historiography have changed, researchers no longer harbor such doubts concerning the information value of the content relayed by these types of publications. Whereas their potentially unobjective embeddedness in contemporary affairs was previously cause for criticism, it is now this very quality that makes historical newspapers appear as particularly rewarding data sources for a number of academic fields. Disciplines such as historical linguistics, historical media studies, art and cultural history, political and social sciences as well as historical economics and many others now increasingly look to historical newspapers as a source for diverse areas of inquiry.[2]

In order to improve the accessibility of sources and facilitate research for scholars, digitization and processing of historical newspaper collections with the help of new technologies has become a priority across Europe.[3] Libraries, archives and research institutions alike are engaged in finding new and effective ways to coordinate their efforts in transferring historical newspapers into digital media. Specially targeted calls, such as the one by the German Research Council (DFG) for the "Digitization of historical newspapers of the German-speaking area", and the ensuing pilot projects are seeking to significantly increase the

1 The authors gratefully acknowledge Jack Bower's assistance with proofreading and Daniela Fasching's translation of German-language quotations.

2 Cf. Maria Elisabeth Müller / Maria Hermes-Wladarsch, Die Digitalisierung der deutschsprachigen Zeitungen des 17. Jahrhunderts – ein Projekt mit Komplexität! In: Oliver Pfefferkorn / Jörg Riecke / Britt-Marie Schuster (eds.), Die Zeitung als Medium in der neueren Sprachgeschichte. Korpora – Analyse – Wirkung. Berlin – Boston 2017, 39–59, here 39 and 44.

3 Europeana Newspapers, accessed 30.10.2018, http://www.europeana-newspapers.eu/.

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number of digitized newspapers and provide a representative cross-section of the available sources. Central to the aims of these efforts is first and foremost the expeditious production of digitized images supplemented with metadata for scientific usage as well as the fundamental improvement of automatic text recognition (ATR) software—or at least the development of tools that can handle full-texts processed imperfectly with the help of optical character recognition (so-called "dirty OCR"). This aspect has hitherto been among the main concerns for ongoing projects like "Impresso"[4] and "News-Eye".[5] Due to the amount and complexity of material available in most cases, only a few projects have thus far tackled the task of transforming historical newspaper publications into reliable full-texts: Rare examples from German-speaking Europe are "GermanC: Corpus of German Newspapers", which contains excerpts from newspapers from 1650 to 1800,[6] the *Deutsches Textarchiv*'s project dedicated to the digitization of the "Stats- und Gelehrte Zeitung des Hamburgischen unpartheyischen Correspondenten",[7] which includes 204 selected issues from the years 1712 to 1851, and the "Mannheimer Korpus historischer Zeitungen",[8] which allows users to explore full-texts via the corpus search and analysis system COSMAS II.

4 Impresso – Media Monitoring of the Past, accessed 30.10.2018, http://impresso-project.ch/.

5 NewsEye – A Digital Investigator for Historical Newspapers, accessed 30.10.2018, https://www.newseye.eu/.

6 The newspaper texts in the GermanC corpus are not reproductions of complete issues, but excerpts of approx. 2,000 words each. In order to allow researchers to trace historical developments, the entire period has been divided into fifty-year sections (in this case 1650–1700, 1700–1750 and 1750–1800), accessed 30.10.2018, https://www.sketchengine.eu/germanc-corpus/. Cf. Martin Durrell, Zeitungssprache und Literatursprache bei der Ausbildung standardsprachlicher Normen im Deutschen im 17. und 18. Jahrhundert. Ein Vergleich anhand eines repräsentativen Korpus. In: Pfefferkorn / Riecke / Schuster, Zeitung, see footnote 2, 81–98.

7 Selected issues of the "Hamburgischer unpartheyischer Correspondent" were digitized in this cooperation between the University of Paderborn and the Deutsches Textarchiv (DTA) and subjected to automatic linguistic analysis. The collection of 212 issues is available and searchable via the DTA repository, accessed 30.10.2018, http://www.deutschestextarchiv.de/book/show/hc_1590610_1751. Cf. Britt-Marie Schuster / Manuel Wille, Von der Kanzlei zur Bürgersprache? Textsortengeschichtliche Betrachtungen zur "Staats- und Gelehrten Zeitung des Hamburgischen unpartheyischen Correspondenten" im 18. Jahrhundert. In: Daniel Bellingradt / Holger Böning / Patrick Merziger / Rudolf Stöber (eds.), Jahrbuch für Kommunikationsgeschichte 17 (2016), 7–29 and Britt-Marie Schuster / Manuel Wille, Die Volltextdigitalisierung der "Stats- und gelehrten Zeitung des Hamburgischen Correspondenten" und ihrer Vorgänger (1712–1848) und ihr Nutzen: Befunde zur Genese und zum Wandel von Textmustern. In: Pfefferkorn / Riecke / Schuster, Zeitung, see footnote 2, 99–119.

8 The largest corpus of historical newspapers and periodicals from the 18th and 19th centuries currently available in the German-speaking area is that of the Leibniz Institut für Deutsche Sprache in Mannheim; it consists of 652 individual issues drawn from 21 publications and contains 4.1 million tokens.

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The project "Wien[n]erisches Diarium",[9] which is focused on the 18th century, has recently joined these ranks. It will be presented here as an example case that may serve as a model for similar future endeavors. Its greatest assets are the carefully reviewed full-texts as well as the text recognition models that have been trained for processing and could be useful in terms of creating satisfactory full-texts of other newspapers from the same period. The abovementioned examples of earlier digitization projects emphasize the point that historical newspaper research is on the rise. In addition, it is clear that scholarly communication and exchange activities dealing with digital newspaper research have increased, and the Diarium project[10] benefits from this established intellectual network made up of prominent communities of interested researchers, initiatives and infrastructure consortia.

In-depth processing of newspapers entails a number of challenges that are still under consideration and discussion by researchers in the field. One of them is the question of how newspapers should be annotated and embedded into digital research environments. Compared to scholarly digital editions of books, there are various key areas and components of digitizing historical periodicals that have yet to achieve an established consensus. In the words of Paul Gooding, "[…] digitized newspapers have not yet asserted their own identity: instead they provide skeuomorphic renditions of source materials and rely upon web norms in the design of user interactions. The result is an inadequate translation of material artefacts […]."[11] In the context of this current situation, the team of the Diarium project is breaking new ground in largely uncharted territory.

9 The three-year project entitled "Das Wien[n]erische Diarium: A Digital Data Treasury for the Humanities" (2017–2020), hosted at the Austrian Centre for Digital Humanities (Principal Investigator: Claudia Resch), is one of twelve proposals funded by the so-called "go!digital2.0" program of the Austrian Academy of Sciences (OeAW), which promotes the humanities and improves the framework conditions for data-based and data-driven research in the humanities on a sustainable basis, cf. go!digital2.0, accessed 30.10.2018, https://www.oeaw.ac.at/en/fellowship-funding/promotional-programmes/godigital/. The creation of the full-text versions and the enrichment of the data are carried out in cooperation with the University of Innsbruck's working group for Digitization and Digital Preservation (contact: Günter Mühlberger) and the Institute for the History of Art and Musicology at the Austrian Academy of Sciences (contact: Anna Mader-Kratky).

10 Members of the project group hold key positions in the working group "Zeitungen und Zeitschriften" of "Digital Humanities im deutschsprachigen Raum" (DHd), head the special interest group (SIG) "Newspapers and Periodicals" at the Text Encoding Initiative (TEI), and are involved in the construction of the European research infrastructure CLARIN-ERIC.

11 Cf. Paul Gooding, Historic Newspapers in the Digital Age. "Search All About It!". London – New York 2017, 173.



Fig. 1a Wienerisches Diarium 26 May 1745, Detail from Christian Seybold: Self-Portrait with the Wienerisches Diarium, Budapest, Museum of Fine Arts, inv.no.:53.406.



Fig. 1b Wien[n]erisches Diarium Volume 1715 (Austrian Academy of Sciences, Collection Woldan) [Photo: Sandra Lehecka].

2. Wien[n]erisches Diarium/Wiener Zeitung – A Valuable Source of the 18th Century

The Wien[n]erisches Diarium (since 1780: Wiener Zeitung) is among the oldest newspapers still being published today. Founded in 1703, it held the undisputed position of being the most important newspaper within the Habsburg Monarchy for a considerable period during the 18th century.[12] While the current Wiener Zeitung appears daily, the Diarium was published twice a week in its first century, namely on Wednesdays and Saturdays. The newspaper was printed in quarto format and contained between 8 and 40 pages, with a considerable increase in volume towards the end of the century.

All archival holdings of early newspapers from the 17th and 18th century can be viewed as rarities in and of themselves.[13] The fact that the entire collection of issues of the Wien[n]erisches Diarium published since its inception has been

12 Cf. Andrea Reisner / Alfred Schiemer, Das Wien[n]erische Diarium und die Entstehung der periodischen Presse. In: Matthias Karmasin / Christian Oggolder (eds.), Österreichische Mediengeschichte. Band. 1: Von den frühen Drucken zur Ausdifferenzierung des Mediensystems (1500 bis 1918). Wiesbaden 2016, 87–112, here 91.

13 Cf. Wolfgang Duchkowitsch, Zeitung und Bibliothek. Der Stand der Erschließung österreichischer Zeitungen des 17. und 18. Jahrhunderts und Vorstellungen für den Soll-Zustand. In: Otto Mazal / Eva Irblich (eds.), Das historische und wertvolle Buchgut in der Bibliotheksverwaltung. Vienna 1980, 55–61, here 56.

https://doi.org/10.7767/9783205209096 |

preserved increases the significance of this intact body of sources for scholarship substantially. According to the Austrian National Library, the Wien[n]erisches Diarium is in fact "certainly the most frequently used source on the more recent history of Austria";[14] it was therefore one of the first periodicals scanned and made available online through the project "ANNO – AustriaN Newspapers Online".[15] This was done in part by digitizing existing microfilm copies of various issues and in part by disassembling collective volumes comprising multiple issues (usually a year's worth of publications). By now, issues from nearly every year of publication have been added, and digital copies of more than 1.3 million pages of the Wiener Zeitung can be accessed online as .pdf and .jpg files at present. The ANNO portal's open-access service is available free of charge and without registration. It provides a calendar view allowing reliable access to issues from specific years and days, while a recently added feature also permits users to search an automatically generated full-text. As this search is based on data created automatically with the help of OCR (optical character recognition),[16] the library concedes that "some texts are affected by a very high density of errors".[17] Indeed, the downloadable full-texts—especially those of the earlier issues—are riddled with text recognition errors that can be traced back to the "unusual" letter shapes of the German blackletter typeface or to insufficient contrast and slanted or warped lines caused by imperfect positioning of the originals during scanning, among other problems. Due to the varying success rates of the text recognition process, it is difficult to gauge how many potential hits are missed in any given search,[18] which, in turn, is problematic for analyses based on such searches.

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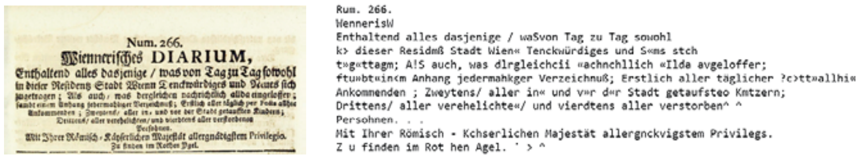
14 "[…] mit Sicherheit die am meisten verwendete Quelle zur jüngeren Geschichte Österreichs." Johanna Rachinger, "Alles Denckwürdige, so von Tag zu Tag …". In: 300 Jahre Wiener Zeitung. Eine Festschrift mit einem Begleitteil zur Ausstellung "Zeiten auf Seiten" in der Österreichischen Nationalbibliothek 2003, 53.

15 ANNO – AustriaN Newspapers Online, accessed 30.10.2018, http://anno.onb.ac.at/.

16 The electronic text used for this search option was created with the help of optical character recognition (OCR) software (which is not designed to deal with Gothic typefaces). The fully automated OCR process, however, created only "dirty" converted text that was not proofread by humans and therefore severely limits the possibilities of the full-text search.

17 "Bei OCR (Optical Character Recognition) handelt es sich um ein automatisiertes Verfahren, weshalb es in manchen Texten zu einer sehr hohen Fehlerdichte kommen kann." This caveat is included on the ANNO website in the section headed "Qualität des Volltextes" [quality of the full-text], cf. ANNO, accessed 30.10.2018, http://anno.onb.ac.at/suchhilfe.htm.

18 For instance, a search for occurrences of the toponym "Laxenburg" in the Wiener Zeitung during the period from 1703 to 1799 produces a total of 629 hits. However, it is difficult to gauge how many potential results are not listed, due to a well-known OCR-error that consists of mistaking the gothic "x" for an "r". A cross-check can be performed easily by looking for the misrecognized form "Larenburg", which produces no fewer than 71 additional hits for the given time period.



Num. 266.
Wiennerisches DIARIUM,
Enthaltend alles dasjenige / was von Tag zu Tag sowohl
in dieser Residentz Stadt Wienn Denckwürdiges und Neues sich
zugetragen; Als auch, was dergleichen nachrichtlich allda eingeloffen;
Personen.
Mit Ihrer Römisch-Käyserlichen Majestät allergnädigstem Privilegio.
Zu finden im Rothen Ygel.

Rum. 266.
HennerisW
Enthaltend alles dasjenige / waSvon Tag zu Tag sowohl
k> dieser Residmß Stadt Wien« Tenckwürdiges und S«ms stch
t»g«ttagm; A!S auch, was dlrgleichcii «achnchllich «Ilda avgeloffer;
ftu»bt«in<m Anhang jedermahkger Verzeichnuß; Erstlich aller täglicher ?c>tt»allhi«
Ankommenden ; Zweytens/ aller in« und v»r d«r Stadt getaufsteo Kmtzern;
Drittens/ aller verehelichte«/ und vierdtens aller verstorben^ ^
Persohnen. . .
Mit Ihrer Römisch - Kchserlichen Majestät allergnckvigstem Privilegs.
Z u finden im Rot hen Agel. ˙ > ^

Fig. 2 Facsimile and “dirty OCR”.

In order to facilitate more intensive and effective future uses of the Wien[n]erisches Diarium/Wiener Zeitung, further work on the improvement of the full-texts is an urgent and indispensable necessity. The availability of a reliable digital full-text would “increase exponentially the possibilities of scientific insight”[19] and enable new forms of analysis for researchers from many disciplines. In contrast to Müller und Hermes-Wladarsch, who do not see a requirement for the creation of optimal full-text versions in the case of historical or political research questions and consider it sufficient to make do with image digitizations,[20] the authors of this paper assert that all scientific disciplines could potentially benefit from reliable, fully searchable, digitized versions of historical periodical sources. Moreover, by digitally unlocking the full-text of the Diarium, the project would not only simplify ongoing research on historical newspapers, but could potentially help to generate entirely new ways of approaching, querying and analyzing the source, creating new queries and research questions that cannot even be fully anticipated at this point. For this reason, it is the project’s primary aim to secure and process the full-text of the Wien[n]erisches Diarium and make it accessible to a broad range of potential users.

However, at more than 10.000 issues, the Diarium of the 18th century provides a daunting quantity of text and data. As the project’s resources were limited, the team was forced to make a selection and focus on a number of issues manageable within the project’s duration. For the time being, the three-year project has started out with a relatively small amount of data and is concentrating its efforts on thoroughly editing a limited corpus of approximately 400 selected issues from all decades of the 18th century. Working on this smaller batch of issues during the first phase of the project also allows the team to assess the effort and challenges inherent in the creation of such high-quality full-texts, generating vital insights and experiences that, in turn, can be used to optimize the workflow at later stages of the project, when we will be dealing with significantly larger amounts of data.

19 Cf. Müller / Hermes-Wladarsch, Digitalisierung, see footnote 2, 50.
20 Cf. Müller / Hermes-Wladarsch, Digitalisierung, see footnote 2, 45.

2.1 Corpus (Co-)Creation with Prospective Users

In order to support current and future research endeavors and meet the interests and requirements of future users, the issues digitized in the ongoing first phase were selected in close cooperation with researchers from various humanities disciplines and under consideration of input by readers of the Wiener Zeitung and other potential users, who were invited to nominate issues they deemed particularly relevant for digitization.[21]

Thanks to the diverse spectrum of submitted feedback, we were able to take into account the wishes and needs of a wide range of disciplines, research areas and fields of interest in the final selection of issues. A review of the nominations received has shown how broad a spectrum of topics they cover. While most issues were chosen due to the fact that they document a specific event or occasion, ranging from births and baptisms, birthdays, saint's days, coronations and hereditary homages of crowned sovereigns to deaths, funerals, executions and natural catastrophes. Other events covered in the nominated issues are religious and secular festivities, announcements, openings and inaugurations as well as visits to the capital by famous guests. Reports on notable achievements in the broadest sense of the word, such as the Declaration of Human Rights or the beginning of aviation, are likewise included in the selection.

Given the broad array of topics chosen by the communities consulted, further additions to the selection were made by the project team with the purpose of closing larger temporal gaps. To be able to accurately and thoroughly document the publication in a continuous, chronological manner, we ultimately decided to include five representative issues from each year (as far as they had been digitized by ANNO). At this point, it is worth noting that the newspaper's page count increases continually over time and the issues thus become substantially longer: While they comprise an average of ten pages during the first decade of publication, issues from the last decade of the 18th century are as long as forty pages. Accordingly, the number of characters to be processed per issue rises from an average of 30,000 to more than 160,000. This increase in text volume over time is owed not only to the growing page count, but also to an increase in characters per page brought on by more efficient and economical layout formatting and denser typesetting.

Considering that the 18th century was a period of radical change in the political and social spheres, as well as with regard to developments in the sciences

21 The public was consulted via a "call for nominations" published on the project website and promoted via various channels such as the hosting institute's Twitter channel and an information booth at the "Digital Days" of the Austrian Society for Eighteenth Century Studies (OGE18). The announcement of the initiative via the widely read modern Wiener Zeitung in particular was an important way of reaching and including not only scholars and their input, but also to involve a much more varied community of members of the interested public.

and arts, one of the goals of the project was to create a chronologically balanced corpus with complete issues from all decades of the century. The corpus is designed to showcase developments over time and is well suited to diachronic studies—with respect to the historical realities and mentalities represented in the Diarium as a source as well as the transformations of the source itself, which evolved over time and reflects the emergence of the newspaper as a new medium. Similarly, the collection could be used as a resource in the synchronic as well as diachronic study of historical language varieties and language change (cf. Section 3).

2.2 Workflow: From Digital Images to the Publication of Reliable Full Text

As the issues to be made available within the first two years of the project have a combined volume of approximately 7,500 pages, the team had to develop an automated workflow to create highly accurate full-text without the need for manual intervention during each step. While the transcription of texts is currently still a time-consuming task performed mainly by hand, automatic processing of large amounts of text may eventually become the standard workflow for larger projects.

The workflow used in the Diarium project is largely automated and generally follows a sequence of four steps to be taken for every text, i.e. every issue of the Diarium. These steps are as follows:

1. acquisition of images
2. image preprocessing
3. layout and text recognition
4. processing of the full-text for publication.

Hence, the very first step is to obtain digital images of the selected issues to be analyzed. In the case of the Diarium project, the scans provided by ANNO have hitherto formed the basis for all further processing. Once digital images of the pages of each issue have been obtained, they are subjected to preprocessing and automatic deskewing so as to improve ATR results.

The recognition phase of the workflow relies on our project partner: the Transkribus[22] software. It was originally created by the EU-funded READ project[23] as a tool for transcribing handwritten texts. As such, it includes modules for both layout analysis and Handwritten Text Recognition (HTR) as well as several tools to aid in manual transcription tasks. The software's features can be accessed through an application programming interface (API) and can thus be used by our scripts. Within Transkribus, the pages first undergo layout recognition.

22 Transkribus, accessed 21.01.2019, https://transkribus.eu.

23 READ – Recognition and Enrichment of Archival Documents, accessed 21.01.2019, https://read.transkribus.eu.

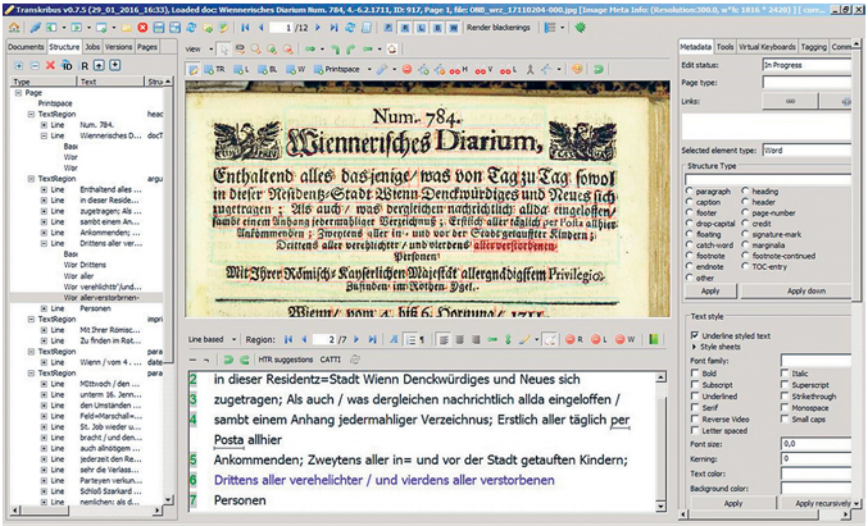


Fig. 3 Screenshot of the Transkribus platform.

Since the ATR process works by following the baselines of written text lines, it is highly dependent on accurately drawn baselines to produce good results. Each baseline—i.e. the line on which most letters "sit"—is contained within exactly one line of text (while a line of text may, in theory, have multiple baselines). Each line of text in turn is part of exactly one text region (which, of course, will often contain multiple lines), for example a "paragraph" or a "heading". Finally, the text regions are contained in the so-called "print space", i.e. the outer, usually rectangular boundary within which all written text on a given page can be found. One necessary property of regions and lines is their reading order, which is especially important where two or more columns of text are present on the entire page or in between stretches of text with only one column.

While Transkribus allows users to draw all elements manually, the substantial volume of source material made this an impracticable option. Instead, an automated process was employed which, due to the constraints of the tools included in Transkribus, was split up into two subprocesses: finding text regions, and finding lines and baselines within those regions. The first step currently makes use of Abbyy Finereader. While its results in recognizing broken scripts like German blackletter typeface are usually far from satisfactory, it still provides very good recognition of text regions and their reading order. This result is used as the basis for the second step, i.e. finding the baselines. Significant work has gone into improving layout recognition, which will likely make this step easier and more accurate in the near future.

Next, the Handwritten Text Recognition algorithm, a type of ATR, is run on the text. While the software was originally conceived as a means of recognizing handwritten text, as the name suggests, it is basically agnostic of the type of script it is applied to and can process any number of different types of writing. Its model utilizes text provided as "ground truth" (i.e. a digital transcript of the original text), which is used as a baseline for the attempt to learn how a certain result character is rendered in the given source. For the Diarium, the team started out with a few issues that were transcribed completely by hand and used to train an initial model. Subsequently, the issues to be processed were divided into batches of about 40–50, which were first recognized by the HTR engine and then corrected to an accuracy of around 99.7%, meaning an average of three incorrect characters for every 1,000 characters overall. Each such corrected set then serves as a training and test data set for a new model that is applied to the next batch of issues. By providing a larger training set, the results of the recognition can be greatly improved. Optimal results require very good input, however: Blurry images, images where the page is not smooth and flat, and pages missing parts of their texts due to margins being cut off all cause errors in the text recognition process, which then necessitate manual intervention. Obviously, contemporary changes and errors can likewise result in faulty text. Another challenge is posed by tables within the texts, which are frequently recognized incorrectly as several parallel paragraphs or simply a set of lines.

The current model specifically trained for the Diarium generates text with an error rate of less than 1 per 100 characters within a standard paragraph from a good quality image. Further improvement of both the model and the quality of the underlying images will facilitate the automatic processing of even larger amounts of text to add more issues to the corpus of Diarium issues created by our project.

These steps are applied to a batch of (currently 50) issues by a script.[24] After text recognition has finished, the transcribed full-text is exported as a single TEI[25] XML file per issue. Some post-processing is then required to prepare the text for publishing: One step is to apply basic whitespace tokenization in order to be able to address every "word" in the text with a unique identifier. Additionally, we use the pixel coordinates of the text regions to find their relative position within a page. This is done by applying a series of XSLT transformations to the files exported from Transkribus.[26] As soon as all automated processes are

24 GitHub, accessed 30.10.2018, https://github.com/dariok/wienerdiarium/blob/master/skripte/processBatch.ps1.

25 TEI – Text Encoding Initiative, accessed 30.10.2018, http://www.tei-c.org/.

26 These scripts and accompanying tests can be found on the GitHub platform, accessed 30.10.2018, https://github.com/acdh-oeaw/digitarium/tree/master/skripte.

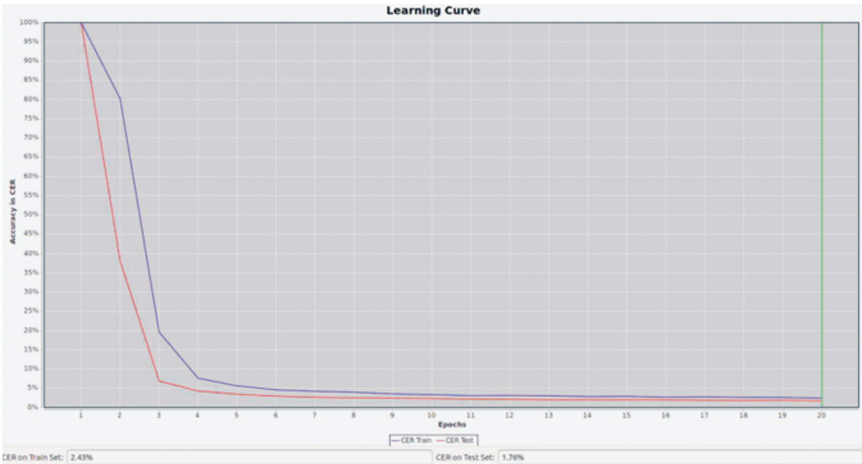


Fig. 4 Learning curve of the Diarium model.

completed, the results are checked visually to see if the generated output is satisfactory and determine whether corrections are necessary.[27]

As soon as the corpus of preliminarily selected issues has been processed, it will be possible to assess the amount of time and effort required to perform a full-text digitization of the entire collection. What has already become evident is that the training model created with the help of the already rather sizeable amount of text data from the Diarium will be applicable to other (newspaper) documents from the period as well. For instance, it is currently being tested on early issues of the "Zürcher Zeitung" (founded in 1780) by the "Impresso" project. The fact that a project with a relatively small scope can produce results that are reusable in other projects and on other data demonstrates how even limited projects can make significant contributions to the development of efficient and increasingly accurate ways of automatically generating digital full-text versions of early newspapers.

2.3 Wien[n]erisches DIGITARIUM

As soon as automatic processing of a batch of issues is complete, the finished texts are uploaded to the so-called DIGITARIUM, the project's web application.[28] In the table of contents, issues are grouped chronologically by year,

27 Due to the given budget and time constraints, this had to be a rather quick process. In-depth review and correction (of further issues to come) may, however, be performed by the users later on.

28 The application is part of the project's web page, accessed 30.10.2018, https://digitarium.acdh.oeaw.ac.at/.

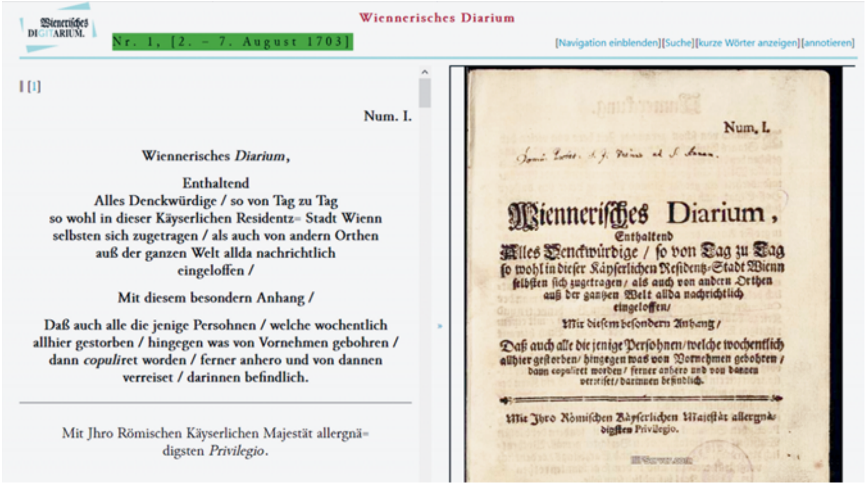


Fig. 5 Screenshot of the DIGITARIUM wep app.

month, and day in order to provide structure and make specific issues easier to locate.

Each issue is presented in a parallel view, i.e. the digitized text is displayed on the left while the right-hand side contains the digital image and may also be used to display additional information or annotations. The top of the screen provides links to basic tools on the right, while the background color of the issue's number and date hints at the quality of the document, meaning the number of full proofreading passes. The tools currently available include a full-text search and a basic annotation feature. The full-text search can either be limited to the current issue's year or expanded to the entirety of the corpus. It can be used as a standard string search, but also supports regular expressions so that variants of a word can easily be found. The annotation feature currently supports only simple text annotations that can be attached to any word or sequence of words. It will be soon expanded to allow both public and private annotations of different types, e.g. full-text, topic, identification of an entity, etc. Furthermore, it will also be used for project-internal purposes, such as specifying contents that need to be corrected.

In a potential follow-up project, it will be crucial to identify joint priorities between the participating disciplines and aspects of particular relevance concerning the preparation of the sources for their digital environment. While the common full-text search will certainly remain a very important gateway to the contents of the DIGITARIUM, other ways of accessing the data will need to be investigated as well so that users can collect data by means better suited to their

individual research. One of the planned features is the possibility for users to create their own sub-corpora by using a "shopping basket": From the results of a search or while reading, an issue can be added to a private corpus. Full-text searches can then be limited to this private corpus, reducing the number of issues that need to be searched and thus speeding up the research process. Additional new features and the further development of the user interface will be discussed with the DIGITARIUM's users.

The experience gained during the project demonstrates that user interfaces should be conceived and developed with the needs of future users in mind rather than in pursuit of technical advancement for its own sake. As Gooding asserts, "by understanding the audience for digitized collections, we can better develop a sense of where the major successes lie and what challenges remain ahead of us."[29] It is only through the establishment of a dialogue with the target audiences and carefully implemented measures of user involvement that we can learn how to optimize the resource and determine which key functions and new features need to be provided for its eventual user base. By approaching prospective users early on in the development process, the project has avoided creating a product that is ill-suited to the requirements of its consumers and potentially alienating. This is in line with Paul Gooding's general recommendations for the planning and development of large-scale digitized collections. He draws special attention to the fact that this conceptual work "should be done in conjunction with endeavours to define the expected audience and purpose of digitized collections before they are created."[30] The recently published list of recommendations Gooding has developed will serve as guidelines for the Diarium project over the coming years: "A successful large-scale digitized newspaper collection […] allows an international audience of researchers, academic and non-academic, to access digitized materials from around the world, for free; it provides access to full-text, metadata and scanned images under licenses which encourage reuse; it provides an interface which supports multiple approaches to the material; and it builds user-focused design into its planning and implementation."[31]

At the moment, the DIGITARIUM project advocates an approach oriented strongly towards the needs and interests of prospective target audiences, which include researchers as well as students and an interested public outside academia. The project operates based on the conviction that the design and development of user interfaces should be seen not as a minor matter to be completed as an afterthought, but as a central component to every publication or edition

29 Gooding, Newspapers, see footnote 11, 172.
30 Gooding, Newspapers, see footnote 11, 172.
31 Gooding, Newspapers, see footnote 11, 182.

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project, with a fixed place in project planning.[32] At the same time, funding institutions can support this process by granting researchers creating digital products enough time and resources to identify relevant user groups and their respective needs.[33] Ideally, the development of prototypes is a participatory process accompanied by multiple rounds of interviews, discussion rounds, tests and evaluations, as only the continuous adaptation of technology to its prospective users can ensure that new digital resources will actually be adopted and used.

3. "Added Value" of the Reliable Full Text Digitization and Exemplary Perspectives for Future Research

With the creation of a high-quality machine-readable text version of a selected corpus of newspaper issues, the Diarium project not only contributes to improving ATR for historical newspapers, but sets out to fulfill an urgent need in the field.[34] Facilitating the use of this valuable source in a digital environment is of great scholarly interest to a number of sub-disciplines within the humanities. By making the tool freely and easily available to researchers everywhere, the Diarium could become a unique and valuable cornerstone resource. Media history, art history, music history, literary studies, ceremonial studies, onomastics and historical linguistics are just some of the fields that might benefit from the collection. The first users' conference in 2018 "From Diarium to Digitarium"[35] has shown the spectrum of potential target groups, which include not only humanities scholars, but also environmental and natural scientists, as well as interested citizens and students. This means that there is a wide diversity in the areas of interest, levels of education, and computer proficiency, as well as in the range of specific scientific methods, research conventions, and workflows for which the application will be used. Some representative examples from the

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32 Cf. Fred Gibbs / Trevor Owens, Building Better Digital Humanities Tools: Toward Broader Audiences and User-Centered Designs. In: Digital Humanities Quarterly no. 6, 2 (2012), accessed 30.10.2018, http://www.digitalhumanities.org/dhq/vol/6/2/000136/000136.html.

33 Cf. Gooding, Newspapers, see footnote 11, 180.

34 A recent survey carried out among researchers who are familiar with the Wiener Zeitung and frequently use it as a source revealed that the queried persons strongly agree with the notion that a reliable source text would be a useful asset for their work.

35 The project-related results of the conference will be published in the "Wiener Geschichtsblätter" in the first half of 2019; the case studies covered include projects dealing with observations of comets in the 18th century, records of floods, announcements of theatre plays, the development of advertising, reports on construction work at the Wiener Hofburg, and early stages in the development of fireworks in Vienna.

variety of discipline-specific research questions will be outlined in the following section.

The fact that the newly developed DIGITARIUM will contain authentic and reliable language data from a period of nearly 100 years makes the newspaper corpus a valuable resource for various (diachronic) studies within historical linguistics. This is particularly significant since newspapers are a hitherto underexplored resource in this area of research. From a linguistic or philological perspective, they are particularly interesting as sources because "the contribution of newspaper writers to the development of the German language has barely been acknowledged so far, but is hard to overestimate."[36] As Schuster and Wille have shown in reference to the selective corpus of the "Hamburgischer Correspondent",[37] the corpus will make it possible to track the origin and potential evolution of lexemes and lexical patterns over the course of the 18th century. Just as in the present day, the steady increase in world knowledge and the need to describe a rapidly changing world were reflected in newspapers of the period. The need to create and accommodate new vocabulary fuels processes of lexical innovation, and this fact is exhibited in the distinct style of the daily press (more than in many other genres), making such publications a rich resource for lexicographical studies.[38] As Gloning observes, these resources have barely been made use of so far, arguably because the value of this genre of sources for historical linguistics was not recognized—or at least not emphasized—by earlier literature in the field.[39] In his conclusion, which can be read as a plea, he points out that "considering how, throughout the modern era, newspapers have reflected the knowledge and themes that were becoming relevant to the (bourgeois) public, (digitally processed) newspapers should figure much more prominently in the historical-lexicographical study and documentation of the vocabularies referring to these areas."[40]

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36 "Der Beitrag der Zeitungsschreiber zur Entwicklung der deutschen Sprache ist noch kaum gewürdigt und schwer zu überschätzen." Volker Bauer / Holger Böning (eds.), Die Entstehung des Zeitungswesens im 17. Jahrhundert: Ein neues Medium und seine Folgen für das Kommunikationssystem der Frühen Neuzeit. Bremen 2011, x.

37 Cf. Schuster / Wille, Volltextdigitalisierung, see footnote 7, 105–109.

38 Cf. Thomas Gloning, Alte Zeitungen und historische Lexikographie. Nutzungsperspektiven, Korpora, Forschungsinfrastrukturen. In: Pfefferkorn / Riecke / Schuster, Zeitung, see footnote 2, 121–147.

39 Gloning, Zeitungen, see footnote 38, 121.

40 "Wenn man davon ausgeht, dass die Zeitungen in der Neuzeit ein Spiegel der Wissens- und Themengebiete sind, die für eine bürgerliche Öffentlichkeit eine Rolle spielen, dann müssten (digital erfasste) Zeitungen in viel stärkerem Maße auch Grundlage sein für die historisch-lexikographische Aufarbeitung und Dokumentation der auf diese Gebiete bezogenen Teilwortschätze." Gloning, Zeitungen, see footnote 38, 138.

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The availability of digital full-texts will also make it possible to identify, within the texts themselves, linguistic markers that can be used to trace the development of textual structures in newspaper writing. By the same token, it will be possible to determine—without having to peruse hundreds of individual issues—whether the use of forms of respectful and polite address (marked linguistically through the enumeration of complex titles) is subject to fluctuation in form or frequency over the course of time.[41] Another area of study could examine the question of when and how the reading public is addressed directly in newspaper texts, for instance, in notes from the publishers or advertisements; preliminary observations show that this was rare in the early stages of publication, but occurred more frequently towards the end of the 18th century.

In order to allow users to reap the full benefits of the Diarium's character as a serial source of information, the project team is hoping to expand the web application and corpus over the course of the next few years by adding all issues from at least the first 15 years of the Diarium's existence. In this respect, it is necessary to make a large number of issues available in a quality enabling researchers to find precisely the parts of the newspaper they need. Thanks to the work done in the Diarium project, text recognition models specially trained for this specific source type are now available to continue the largely automated production of reliably transcribed full-texts. Although these models can process large amounts of data efficiently, there is still work to be done, as our existing tools need to be expanded and made more robust—both in order to guarantee the desired high text accuracy and to ensure the ability to sufficiently process the even larger amounts of data we would like to add to the collection. Ideally, mirroring the periodicity of the source and the fact that much of its utility stems from the continuous stream of information, the DIGITARIUM should be expanded gradually until all issues of the Wien[n]erisches Diarium/Wiener Zeitung from the 18th century have been made available.

41 Cf. Schuster / Wille, Kanzlei- zur Bürgersprache, see footnote 7, 15 and Schuster / Wille, Volltextdigitalisierung, see footnote 7, 104.

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Per Pippin Aspaas, Katalin Pataki

Did Astronomy Constitute a Denominationally Neutral Space within the Republic of Letters?

An Outline for the Use of Visualization Tools in the Study of Astronomical Correspondence

1. Disclaimer[1]

"This article is a stub". This quote, which should be familiar to anyone who, during an Internet search, has come across a Wikipedia page presenting insufficiently documented information, may not seem like a promising starting point for a research article. Much of what is published within the field of Digital Humanities (DH), however, is precisely that: insufficiently documented. This article is no exception. It is an experiment—or more precisely an attempt to present an outline for the use of visualization tools in the study of astronomical correspondences. Essentially, it represents a big data approach applied to a much too small dataset. You can help the Digital Humanities community by expanding it.

2. What's in a Map?

Letters are small, uniform units carrying information about interactions between people of the past. Extracting basic metadata (letter written by person x at location a, addressed to person y at location b, dated day–month–year) and inserting this information into a tabular overview is as straightforward and well-established a method as it is a powerful and indispensable one. It can

1 The idea for this article was first discussed with Thomas Wallnig (Vienna) in the context of a European COST Action programme that he chaired together with Howard Hotson (Oxford): "Reassembling the Republic of Letters, 1500–1800" http://www.republicofletters.net/, accessed 22.01.2019. We thank Thomas and the rest of the editorial team of this issue of *Das Achtzehnte Jahrhundert und Österreich*, and in particular the anonymous peer reviewer, for numerous suggestions for improvement of our manuscript. We also thank László Kontler (Budapest) and Helene N. Andreassen (Tromsø) for moral support and fruitful discussions; the DARIAH-DE helpdesk team, the organizers and lecturers of the ReIReS Digital Humanities courses held in Mainz, and the Dataverse.no team of UiT The Arctic University of Norway for technical guidance.

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also be an excellent basis for further investigation. Tools that summarize such information visually and provide an easily accessible overview can open up new fields of inquiry. Graphs depicting networks as well as maps tracing the correspondence of persons of the past have often been used as illustrations in the traditional formats of scholarship. Such maps have apparently also often been considered dispensable, however—a kind of supplementary material that may or may not be produced and added at the very last stage before a publication like a biography is put to print. In the field of Digital Humanities, it is becoming increasingly common to reverse this process: In many recent projects, visualizations of correspondence networks no longer simply serve as illustrations, showing the reader in a condensed fashion what hundreds of words already spell out in detail in the main text of a publication. Rather, visualizations have become heuristic tools for scholars in their own right.

As the production of sophisticated, flexible maps becomes part of the workflow throughout the research process, it can also increase the need to (re-)read the traditional sources with a higher sensitivity to pieces of information that refer to spatial relations and draw the attention of researchers to metadata referring to geographical location. In fortunate cases, the mapping process can generate a dialogue between traditional, text-centred inquiries and computational methods based on geographical and numerical data. In the latter approach, the results are communicated more easily and efficiently with the help of visualisation tools. However, they can also require a different set of skills from the researcher as well as the reader to evaluate and interpret them.

It is the aim of this article to explore the possibilities and limitations of visualizations based on the metadata of correspondences. Our test case is that of Habsburg astronomers witnessing the dissolution of the Society of Jesus in 1773. While the ideologically charged discourse about—and gradual suppression of—Jesuits in Catholic Europe went on for more than two decades, the papal bull *Dominus ac Redemptor noster* of July 1773 dealt a dramatic blow to the order in the Habsburg territories. The Jesuits were not the only monastic order targeted by these reforms, but they were the first to face complete abolition and the takeover of their houses and schools by the state.

By investigating the correspondences of three Habsburg astronomers, each of whom was active in the profession at least a decade before and after 1773, we hope to shed light on the opportunities offered by maps as compared to a) crude tabular overviews of correspondence metadata and b) more traditional, non-DH approaches.

The creation of the maps presented in this article was not merely restricted to rendering a visual representation of certain geographical data. It was also motivated by the ambition to create maps on the basis of the available data. Finding suitable digital tools for communicating these ideas was necessary

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not only for the sake of the readers of the article, but to enable the authors themselves to collaborate efficiently. Besides the commonly known options provided by Google Maps, the newly developed tools for Digital Humanities such as DARIAH-DE Geo-Browser and Palladio[2] proved to be helpful for creating online-accessible maps that can be used dynamically—unlike maps confined by the limitations of a “frozen” printed image—by zooming in and out, scaling symbols according to various variables or linking geographical data with a timeline. The map views presented in this article were created using QGIS in accordance with the requirements and limitations that printed maps are forced to comply with.

Using such a variety of tools also made it necessary to clean and reshape the datasets. In this regard, the standards required by DARIAH-DE Geo-Browser and Palladio were instructive not only for creating datasets that are reusable in multiple ways for the actual project, but also for complying with the FAIR data principles[3] intended to facilitate long-term usability of data by ensuring that they can be easily exchanged, amended or contrasted with the results of other researchers.

The astronomers we selected, namely two Jesuits and one Benedictine, experienced the dissolution of the Society of Jesus in 1773 at a point when they were at the height of their careers. It was our goal to determine whether this dramatic event constituted a watershed in their professional careers in terms of the number of letters exchanged with peers at other observatories. In undertaking our analysis, we first produced tabular overviews of what remains of their correspondences, then constructed several maps based on this information. In the tabular overviews, correspondents are listed according to religious affiliation (denomination). The quantity of letters exchanged with peers at different locations before and after 1773 is highlighted both in the tabular overviews and the accompanying maps. Rather than proceeding *in medias res*, however, a brief introduction to the eighteenth-century “Republic of Astronomers” and the specific importance of transdenominational correspondence for this community seems warranted.

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2 Palladio was constructed by the Mapping the Republic of Letters project at Stanford in keeping with the overall aim of developing “a general-purpose suite of visualization and analytical tools” for the examination of “scholarly communities and networks of knowledge during the period 1500–1800”, see http://hdlab.stanford.edu/palladio/about/, accessed 22.01.2019. Geo-Browser was developed by the Staats- und Universitätsbibliothek Göttingen in collaboration with other partners of the DARIAH-DE project. It aims to provide “researchers of the humanities and cultural sciences” with a tool “for the analysis of space-time relations of data”, see https://de.dariah.eu/geobrowser, accessed 22.01.2019.

3 FAIR = Findable, Accessible, Interoperable, Reusable. See https://libereurope.eu/wp-content/uploads/2017/12/LIBER-FAIR-Data.pdf, accessed 22.01.2019.

3. The Republic of Astronomers

The notion of a *respublica litteraria* or Republic of Letters was a commonplace in early modern science. According to the concept, scholars were to put aside all political, cultural and theological antagonisms and engage in an empirically-based, mutually beneficial pursuit of knowledge. And although there may have been some divergence between ideal and reality, there can be no doubt that the concept and its accompanying associations helped to create a common identity among men of learning. As an "imagined community", the Republic of Letters assembled "intellectual citizens" across political, cultural and confessional boundaries and allowed them to engage in a fruitful exchange of scientific ideas and empirical results.[4] A subdivision of this larger republic of the learned was the *respublica astronomica* or "Republic of Astronomers".[5] During the seventeenth century, astronomy had been marked by a series of ground-breaking *theories* that were often based on observations made by a single observer in an isolated observatory. Kepler's calculations, for example, were based almost exclusively upon the observations of Tycho Brahe. By contrast, eighteenth-century astronomy was characterized by the operationalization of the theories of Kepler, Newton and Leibniz as scientific *practice*. The century of enlightenment saw the appearance of a steadily growing number of observatories equipped with standardized instruments and populated by observers that collaborated transnationally—and transconfessionally—on a scale that would have been impossible before.[6]

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4 For further reading, see for example Lorraine Daston, The Ideal and Reality of the Republic of Letters in the Enlightenment. In: Science in Context 4 (1991), 367–386; Hans Bots / Françoise Waquet, La République des Lettres, Paris 1997; Dirk van Miert / Howard Hotson / Thomas Wallnig. What was the Republic of Letters?, in: Howard Hotson / Thomas Wallnig (eds.), Reassembling the Republic of Letters in the Digital Age. Standards, Systems, Scholarship. Göttingen 2019, 21–38.

5 The term appears to have been widely used not just by the astronomers themselves, but also in non-specialist journals reviewing their work. See e.g. the review of Johann III Bernoulli's *Liste des astronomes connus, actuellement vivans*. In: Gazette littéraire de l'Europe 76:2 (November 1776), 446–449 ("République Astronomique"); or the review of Hell's edition of Szerdahely's poem *Elegia epidictica, per quam demonstratur: Primum hominem Adamum fuisse primum et maximum Astronomum*. In: Oberdeutsche, allgemeine Litteraturzeitung 3:129 (29 October 1790), 825–826 ("Respublica Astronomica").

6 The rapid growth in institutionalized astronomy is evident from Johannes Weidler, De Praesenti Specularum Astronomicarum Statu Dissertatio. Wittenberg 1727 (describing sixteen European observatories) and Jerôme de Lalande, Des différens observatoires de l'Europe, in: Astronomie, 3rd ed. Paris 1792, xxx–liv (describing 138 observatories).

Eighteenth-century astronomy has been described as a scientific discipline "avant la lettre".[7] The notion of a scientific discipline as entailed by the "functional differentiation" or breakdown of the interdisciplinary nature of the Republic of Letters that took place during the nineteenth century presupposes several constituting elements. Among these are the development of a (separate) professional identity, establishment of (separate) publication venues, and agreement on a (separate) set of *modi operandi*. In contrast to most other branches of science, all these elements are clearly distinguishable in eighteenth-century astronomy. This can be explained in part by intrinsic factors within astronomy as a research activity, and in part by sociocultural factors such as the emergence of a secular work ethic in which theological and ideological concerns were increasingly marginalized.

Collaboration was the *sine qua non* of eighteenth-century astronomy. In order to test new instruments and observational procedures, determine longitudes, and calculate the trajectories of planets and comets etc., the widespread exchange of "corresponding observations" (i.e. simultaneous observation of the same phenomenon from different locations)[8] became essential—since it was the only means by which progress in the (proto)discipline could be achieved. This aspect was not only innate in the immense enterprise of calculating the distance between the Sun and the Earth, and indeed the scale of the entire solar system, by means of simultaneous observations of the transits of Venus in front of the disc of the Sun in 1761 and 1769. It was also a key feature in the painstaking establishment of geographical coordinates, e.g. the ongoing collaborative efforts to determine the longitude of observatories with ever greater precision based on meticulous observations of occultations of the moons of Jupiter as well as solar and lunar eclipses. Such activity was indisputably the task of *astronomers*—and its results were increasingly being published in journals devoted to *astronomy* in which the observational procedures or *astronomical methods* were either taken for granted or (in the event that novel methods or instruments had been used) described in detail.

Over the course of the early modern era, astronomical inquiry became more and more detached from theological questions. By the middle of the eighteenth century, controversies of the kind associated with the trial of Galileo Galilei and the ban on heliocentric theory had either petered out altogether or been swept under the carpet of civility. Jesuits, Benedictines, Lutherans, Anglicans

7 Irène Passeron, La République des Sciences. Réseaux des correspondances, des académies et des livres scientifiques, in: Dix-huitième siècle 40 (2008), 20.

8 For a succinct discussion of this term, see Peter Brosche, Korrespondierende Beobachtungen. In: Ingrid Kästner (ed.), Wissenschaftskommunikation in Europa im 18. und 19. Jahrhundert. Aachen 2009, 95–99.

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and Calvinists all appeared to agree on basic research methods involving long-distance collegial collaboration. With the removal of Copernicus from the *index librorum prohibitorum* in 1758, the secularization of astronomy had reached its symbolical zenith.

While this story may be familiar to historians of the described epoch of astronomy, there are nevertheless nuances left to explore. One question that has rarely been raised, for example, is to what extent individual astronomers crossed denominational borders in their pursuit of corresponding observations. In particular, it appears worthwhile to examine more closely the nature of the "ecosystem" of corresponding observations during periods when it was seriously challenged by external factors—as was the case following the highly politicized suppression of the Society of Jesus in 1773.

4. Three Habsburg Astronomers

By 1773, astronomy was a well-established specialty of the Jesuits in the so-called *Provincia Austriae* (*or Austriaca*). This "Austrian province" encompassed not only modern-day Austria, but all of Hungary and Slovakia along with parts of countries now known as Romania, Croatia, Slovenia and (north-eastern) Italy as well.[9] Beginning in the 1730s, the Jesuits founded a total of five observatories within the province: Two were established in *Vienna* (one attached to the Jesuit college of the University of Vienna and built in 1733–34, the other—the Imperial-Royal Observatory—built on top of the assembly hall of the university in 1755–56), one in *Graz*/Graecium (at the university campus, constructed in 1745), one in *Trnava*/Tyrnau/Nagyszombat/Tyrnavia (at the Jesuit university, constructed in 1753–55), and one in *Cluj*/Klausenburg/Kolozsvár/Claudiopolis (at the Jesuit university, constructions begun in 1753, but apparently never completed).[10] At all of these institutions, Jesuit professors of mathematics, physics or astronomy were put in charge of instruments and programmes for observing the sky; students assisted in observations as part of their education in applied mathematics.

Habsburg astronomers of other religious affiliations were few and far between, with the Benedictines forming a notable exception. The observatory of the Bene-

9 For a contemporaneous map, see Matthaeus Seutter, Provincia Austriaca Societatis Iesu. No place, no date (c. 1727–1730). Digitized by Bibliothèque nationale de France: https://gallica.bnf.fr/ark:/12148/btv1b530412764. Digitized by Moravská zemská knihovna v Brně: http://mapy.mzk.cz/mzk03/001/052/234/2619316430, accessed 22.02.2019.

10 Per Pippin Aspaas / Thomas Posch / Isolde Müller / Ákos Bazsó, Astronomische Observatorien der Jesuiten in der "Provincia Austriae" im 18. Jahrhundert. In: Acta Historica Astronomiae 52 (2014), 89–110.

dictine monastery in *Kremsmünster*/Cremifanum (opened in 1758) was by far their most important site for astronomical research. Some two decades later, a smaller observatory was established at the monastery of *Lambach*/Lambacum (constructed 1777). In the meantime, however, the Society of Jesus had ceased to exist. The Jesuit observatories in Vienna (the one located at the Jesuit college), Graz and Cluj were all soon abandoned and their staff reassigned. In Trnava, the former Jesuit observatory persisted until 1785, when it was abandoned for good. Meanwhile, in accordance with a royal decree, the main university on Hungarian soil had been moved to present-day Budapest, with a new observatory run by former Jesuit professors dislocated from Trnava opened there in 1778. Throughout this entire time, however, the Imperial-Royal Observatory in Vienna continued its activities unabated.

In our present study, we are investigating three Central European astronomers: Maximilian Hell SJ (1720–1792), director of the Imperial-Royal Observatory in Vienna from 1755 to 1792, Ferenc Weiss SJ (1717–1785), director of the university observatory in Trnava and Pest/Buda from its opening in 1755 until 1785, and Placidus Fixlmillner OSB (1721–1791), director of the observatory of the monastery in Kremsmünster from 1762 (a few years after its establishment) until his death in 1791. All three were widely connected and maintained direct contact with colleagues both within the Habsburg Monarchy and beyond. Two of the men, Hell and Fixlmillner, have been referred to as the "founders of modern astronomy in Austria",[11] and the role of Weiss in the Hungarian part of the monarchy was no less constitutive.[12] Within our research project, the preserved correspondence of the Benedictine Fixlmillner and the two Jesuits Hell and Weiss is separated into letters written before and after July 1773 in the tabular overview shown below as well as visually in the map view.

The radical, reform-oriented ideology propagated by Emperor Joseph II may have made their own status questionable and the prospects of their observatories more precarious, but Hell and Weiss nevertheless continued their professional careers as university professors until their deaths. In his position as abbot of the Benedictine monastery of Kremsmünster, Fixlmillner appears not to have been noticeably affected; his abbey remained an autonomous religious entity throughout the tumultuous times of incisive educational and cultural reforms. On the surface, all three men were thus protected from the fundamental reworking of the landscape of learning and education in the Habsburg lands

11 Konradin Ferrari d'Ochieppo, Maximilian Hell und Placidus Fixlmillner. Die Begründer der neueren Astronomie in Österreich. In: Fritz Knoll (ed.), Österreichische Naturforscher, Ärzte und Techniker. Vienna 1957, 27–32.

12 Magda Vargha, Correspondence de Ferenc Weiss astronome hongrois du XVIIIe siècle. 2 vols. Budapest 1990–1992.

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during the latter years of the fourty-year reign of Maria Theresa and the decade of Emperor Joseph II.[13]

From the very beginnings of their careers, the three astronomers that we selected for scrutiny played different roles: Hell was a representative of the university (as professor) and of the court (as Imperial-Royal Astronomer). Upon his appointment as the latter in 1755, he was assigned several tasks including the following:[14]

> In order to promote the honor of this capital and its university, and to steer it towards the common good, the Imperial and Royal Astronomer shall maintain a perpetual scientific correspondence (Commercium litterarium) with all the famous observatories abroad, and in so doing make sure that all observations that are necessary for the advancement of geography be communicated to this observatory by the foreign ones, and that no observations of the kind that other astronomers are eager to receive, shall be neglected by him.

Hell did not ignore this instruction. Moreover, in his role as editor of Vienna's official, large-format almanac—the *Ephemerides ad Meridianum Vindobonensem*—he also seized the opportunity to establish what would effectively become an astronomical journal in its own right. Added to each volume were supplements containing a variety of treatises and reports on astronomy, optics and geophysics that regularly filled more than a hundred *quarto* pages. The *Ephemerides* are testimony to Hell's far-reaching network within the Republic of Letters,[15] but his correspondence has unfortunately survived only in parts.

13 These processes cannot be described in full detail here. For further reading on the anti-monastic measures taken by the Viennese administration in the latter half of the eighteenth century, see for example Gerhard Winner, Die Klosteraufhebungen in Niederösterreich und Wien. Vienna – Munich, 1967; Peter Hersche, Der Spätjansenismus in Österreich. Vienna 1977; Derek Edward Dawson Beales, Prosperity and Plunder. European Catholic Monasteries in the Age of Revolution, 1650–1815. Cambridge – New York 2003, esp. 143–168, 179–228. Dickson, P. (1993). Joseph II's Reshaping of the Austrian Church. *The Historical Journal*, *36*(1), 89–114. doi:10.1017/S0018246X00016125. On the plight of Jesuit astronomers from the Provincia Austriae in particular, see Per Pippin Aspaas, Maximilianus Hell (1720–1792) and the Eighteenth-Century Transits of Venus. A Study of Jesuit Science in Nordic and Central European Contexts. Diss. Tromsø 2012, 84–95, 162–177. http://hdl.handle.net/10037/4178, accessed 22.02.2019.

14 Ernennung Maximilian Hells zum k.k. Astronomen. Beilage: Instruction. Für den Kaiser. Königl. Astronomen Maximilianum Hell S.J. Universitätsarchiv Wien, Universitätskonsistorium, CA 1.2.102. English translation in: Per Pippin Aspaas / László Kontler, Maximilian Hell (1720–1792) and the Ends of Jesuit Science in Enlightenment Europe. Leiden – Boston (forthcoming).

15 For a bibliographic overview, see Carlos Sommervogel, Hell, Maximilien. In: Bibliothèque de la Compagnie de Jésus […] Bibliographie. Tome IV. Brussels – Paris 1893, 238–258. On

For this article, we had access to 91 letters addressed to Hell as well as 259 letters written by him. We have not included letters printed in the *Ephemerides* or included as letters to the editors in the *Journal des Sçavans* in Paris, the *Wienerisches Diarium* and other newspapers and periodicals; our focus lay entirely on the preserved autographic letters.[16] It was not possible within the framework of this study to compile a comprehensive inventory of letters that were printed in contemporary periodicals and books; an expansion into this domain would be interesting for a future project, however. Likewise, it would be an easy task to generate a list of letters that are known to have existed but are not preserved—as evidenced when correspondents began letters by thanking Hell for his previous message.

Like Hell, Weiss also published an annual report, the *Observationes astronomicae in observatorio Collegii Academici Societatis Jesu Tyrnaviae in Hungaria habitae* (spanning the years 1756–1771), but unlike Hell's *Ephemerides*, it was a purely local bulletin summarizing observations made at the Trnava observatory. Weiss did, however, publish occasional articles in the *Ephemerides*, in the *Journal Étranger* and the *Journal des Sçavans* in Paris as well as in Bode's *Astronomisches Jahrbuch* in Berlin.[17] A comparatively modest number of letters from Weiss's correspondence has survived; a representative selection was edited by Magda Vargha in the early 1990s.[18] Supplemented by our own archival research, the list of letters available for our study totalled 59 addressed to and 39 written by Weiss.[19]

Fixlmillner published three astronomical books. They include a 134-page determination of the geographical coordinates of Kremsmünster (published in 1765) and two long reports on various astronomical observations made at the monastery's observatory by himself and his assistants, comprising 280 and 556 pages and published in 1776 and 1791 respectively. In contrast to Hell and his *Ephemerides*, Fixlmillner generally avoided quoting letters in his publications,

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the *Ephemerides* in particular, see László Kontler, The Uses of Knowledge and the Symbolic Map of the Enlightened Monarchy of the Habsburgs. Maximilian Hell as Imperial and Royal Astronomer (1755–1792). In: László Kontler / Anotonella Romano / Silvia Sebastiani / Borbála Zsuzsanna Török (eds.), Negotiating Knowledge in Early Modern Empires. A Decentered View, Decentering Empires. The Sciences of Heavens, Earth, and Man, c. 1550–1810. Basingstoke – New York 2014, 79–105.

16 The metadata for the entire corpus of letters used for this article are freely available online through UiT's open research data archive, at https://doi.org/10.18710/6JUYEY, accessed 22.02.2019.

17 Aspaas, Maximilianus Hell, 92–93.

18 Vargha, Correspondance, see footnote 11.

19 Metadata for all letters used for this study are available through UiT's open research data archive, at https://doi.org/10.18710/6JUYEY, accessed 22.02.2019.

referring instead to printed astronomical treatises and reports.[20] This should not be taken to imply that he lacked "pen-friends", however; in fact, one of his most important contacts was Maximilian Hell. The correspondence between the two men was edited by Ansgar Rabenalt in 1986, a study upon which we relied heavily for the biographical data in the tabular overview below.[21] For our project, 140 autographic letters addressed to Fixlmillner and 41 written by him were verified. Letters from Fixlmillner were occasionally summarized or quoted *in extenso* in journals such as Hell's *Ephemerides* or the *Nouveaux Mémoires de l'Académie Royale des Sciences et Belles-Lettres* in Berlin. Like in the cases of Hell and Weiss, however, we have not included such letters in the current study.

5. Visualizing Hell, Weiss and Fixlmillner

Historians intending to investigate correspondence networks with the help of digital tools can easily find various completed and ongoing projects that provide exemplary case studies as well as tools for visualizing their data. The project "Mapping the Republic of Letters"[22] can be considered the most comprehensive

20 Placidus Fixlmillner, Meridianus Speculae astronomicae Cremifanensis seu Longitudo eius Geographica per magnum illud Solis Deliquium ipsis Calendis Aprilis Anni M.DCC.LXIV. spectatum. Examinatis variorum celebrium Locorum Observationibus accurate investigata atque inventa et adiectis pluribus aliis Spectaculis caelestibus. Styrae 1765; idem, Decennium astronomicum continens Observationes praecipuas ab Anno MDCCLXV ad Annum MDCCLXXV in Specula Cremifanensi factas, una cum Calculis. Styrae 1776; idem, Acta astronomica Cremifanensia. Divisa in Partes duas, quarum Prior Observationes ab Anno MDCCLXXVI. ad Annum MDCCXCI., earum Calculos et Comparationes cum Tabulis, Posterior vero Exercitationes, seu Enodationes variarum Materiarum astronomicarum complectitur. Styrae 1791. For an overview of Fixlmillner's life and work, see [Anonymous], Scriptores ordinis S. Benedicti qui 1750–1880 fuerunt in Imperio Austriaco-Hungarico. Vindobona 1881, 95–98.

21 Ansgar Rabenalt, Astronomische Forschung im 18. Jahrhundert in Kremsmünster. Zu den ersten Berechnungen der Bahn des Uranus nach dem Briefwechsel zwischen Placidus Fixlmillner O.S.B. und Maximilian Hell S.J. (1771–1790). In: Mitteilungen des Oberösterreichischen Landesarchivs 15 (1986), 93–216. See also idem, Briefe Georg Friedrich Branders, mechanici in Augsburg, an Placidus Fixlmillner OSB, 1. Direktor der Sternwarte von Kremsmünster. Ein Beitrag zur Gründungsgeschichte des "Mathematischen Turmes" von Kremsmünster. In: Studien und Mitteilungen zur Geschichte des Benediktinerordens und seiner Zweige 96 (1985), 144–195. A list of Fixlmillner's correspondence has been assembled and made publicly available on the website of Museum Kremsmünster by P. Amand Kraml, http://www.specula.at/adv/monat_1702.htm#Heylling, accessed 22.02.2019. Furthermore, we have received a list with summaries of selected letters made by Marion Jansky during a visit to Kremsmünster in 2017 (pers. comm., May 2017).

22 http://republicofletters.stanford.edu/, accessed 22.02.2019.

endeavour to date in terms of visualizing correspondence patterns. It developed Palladio as an open-source tool for modeling networks in timelines, graphs and maps according to commonly applied standards.[23] The ePistolarium[24] tool provides online access to a database of seventeenth-century Dutch scholars' letters in which a large corpus of searchable texts is directly connected with various visualization tools and enables complex inquiries, including the mapping of the epistolary connections, too. Nevertheless, as the interim and final results of the present study could not be made accessible online with these tools (neither for collaborators nor for a larger audience), our project has benefitted more from the usage of DARIAH-DE Geo-Browser.[25]

Our aim was to investigate how the existing pieces of information about the three astronomers' correspondence networks could be transformed into a more concise and informative format with the help of digital tools, thereby opening up new fields for analytical inquiries. We began by creating a map enabling us to see the correspondence networks of the three astronomers as separate layers in the same view.[26] This made the scale and extent of the networks comparable and overlaps between them visible. A more detailed investigation was then carried out on the dataset of each astronomer. First of all, we examined Maximilian Hell's correspondence in order to see how his network changed around 1773. We shaped our dataset according to the requirements of DARIAH-DE Datasheet Editor and, after uploading it, we displayed the data in Geobrowser and divided it into various layers.[27] We repeated the same process with the data informing about Fixlmillner's and Weiss' epistolary connections.[28] Finally, we distilled the information obtained from the maps showing the correspondence networks

23 http://hdlab.stanford.edu/palladio/, accessed 22.02.2019.

24 http://ckcc.huygens.knaw.nl/epistolarium/, accessed 22.02.2019.

25 https://geobrowser.de.dariah.eu/, accessed 22.02.2019.

26 http://bit.ly/HellFixlmillnerWeiss, accessed 22.02.2019. Unfortunately, the names of the layers disappear in the shareable link and are substituted with ID numbers. Color codes of the map: orange – Hell, purple – Fixlmillner, green – Weiss.

27 The datasheet is available here: http://bit.ly/HellDatasheet. It can be displayed on a map by clicking on "Open Geo-Browser" and it can serve as a base for further inquiries. We created two, online available maps showing the letters separated into recipient (orange) and sender (purple) before and after 1773: http://bit.ly/Hellpre1773, http://bit.ly/Hellpost1773, all accessed 22.02.2019.

28 Fixlmillner's correspondence network in DARIAH-DE Datasheet Editor: http://bit.ly/FixlmillnerDatasheet. Maps showing Fixlmillner's letters separated into recipient (orange) and sender (purple) before and after 1773: http://bit.ly/Fixlmillnerpre1773, http://bit.ly/Fixlmillnerpost1773. Weiss' correspondence network in DARIAH-DE Datasheet Editor: http://bit.ly/WeissDatasheet. Maps showing Fixlmillner's letters separated into recipient (orange) and sender (purple) before and after 1773: http://bit.ly/Weisspre1773, http://bit.ly/Weisspost1773, all accessed 22.02.2019.

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of Hell, Weiss and Fixlmillner before and after 1773 into six printable maps created with QGIS. The starting point, however, was a purely tabular factual overview of the preserved letters from and to the three Habsburg astronomers.

5.1 Hell's Surviving Correspondence Before and After 1773

Maximilian Hell received 105 letters between 1757 and 1790; of these, 91 were received between 1757 and 1772 (fifteen years) and 14 between 1776 and 1790 (fourteen years). No incoming letters are known for the period between 1772 and 1776. In terms of geography, he received letters from 26 cities (reduced to 23 after the merging of Schwetzingen with Heidelberg, of Versailles with Paris, and of Baden near Vienna with Vienna) before 1773, but only from three cities after 1776. In the earlier, more intense period, the known/researched letters exhibit an uneven temporal distribution as well: Hell's correspondence as a recipient of letters was most intense during the year 1759, followed by 1761. For the years 1762, 1765 and 1767–69, there are no surviving letters at all.[29]

Maximilian Hell sent 259 letters between 1757 and 1791. Of these, 148 were sent between 1757 and 1772, four in 1773, and 107 between 1774 and 1791. His letters were sent to 29 cities before 1773 (27 after the merging of Baden with Vienna and of the Vatican with Rome). The location of the addressee is unknown in two cases: von Condie (1761) and J.E. Nilson (1772). Regarding the temporal distribution, 1761 (the year of one of the aforementioned transits of Venus) stands out with 43 letters. Hell's intensive contact with Paris also seems to have been restricted to a relatively short period of time between 1758 and 1764, again with a peak in 1761. In the period from April 1768 to September 1770, Hell was absent from Vienna, undertaking a grand expedition to observe the 1769 transit of Venus from Vardø on the extreme north-eastern periphery of the Dano-Norwegian realm. This expedition has been researched by several historians, which explains the larger number of letters known to have survived from these years.[30] No letters are known for the year 1767, however.

Hell's stay in Vardø coincides with an increase in the number of letters written by him. It is interesting to note, however, that it was not the number of letter destinations that increased significantly, but rather the number of addressees. Hell sent letters to seven cities (Copenhagen, Hamburg/Lübeck, Rome, Talvik, Trondheim, Vardø and Vienna), where they reached 19 or 20 recipients—many of whom were not strictly speaking astronomers, but persons involved in the

29 1757 (11), 1758 (18), 1759 (24), 1760 (1), 1761 (20), 1763 (6), 1764 (1). 1766 (2), 1770 (3), 1771 (4), 1772 (1). We cannot rule out the possibility that Hell's actual correspondence was constant throughout this period. The fragmentary survival of his correspondence is a problem that was difficult to remedy within the framework of this study, however.

30 1757 (2), 1758 (6), 1759 (7), 1760 (4), 1761 (43), 1762 (4), 1763 (1), 1764 (5), 1765 (2), 1766 (3), 1768 (15), 1769 (29), 1770 (2), 1771 (13), 1772 (12).

organization of his trip (Bredal/Paus, Eckleff; the Superior General of the Society of Jesus; Gondola; Grambow; Gunnerus; Hagerup; Christian Horrebow; Höller; Mercier; Niebuhr; Nordal; Oeder; Pilgram; Schøller/Schöller; Thott; von Bachoff; von Oettel; von Osten). A few hubs (Copenhagen, Trondheim, Vienna, etc.) in which the majority of recipients were located can thus be identified. Other possible subcategories of the destinations of Hell's letters (e.g. the Baltic region, capitals) can also be identified.

The temporal distribution of the letters during the post-1773 period is more uniform, with only the year 1781 appearing somewhat more intense with 19 letters.[31]

Tab. 1 Maximilian Hell: number of received and sent letters.
Yellow = secular Catholic; Pink = Catholic bishop; Green = (ex-)Jesuit; Turquoise = Benedictine; Dark red = Lutheran bishop; Red = lay Lutheran; Teal = Calvinist; Grey = uncertain/not applicable.

Place	Received before 1773	Sent before 1773	Received after 1773	Sent after 1773	Denomination of correspondent[32]
Auxerre	1	0	0	0	Trébuchet
Baden near Vienna	1	1	0	0	Cassini de Thury
Berlin	0	4	0	13	Bernoulli, Lambert
Bologna	0	1	0	0	Zanotti
Bratislava	2	7	0	0	Pray, Schumacher
Buda	0	0	0	24	Pray, Weiss
Copenhagen	0	15	4	6	Bugge, Horrebow
Debrecen	2	1	0	0	Hatvani
Eger	0	3	0	26	Eszterhazy
Florence	4	2	0	0	Ximenez
Göttingen	1	0	0	2	Schlözer, Kästner
Graz	3	0	0	0	J. Mayr, Poda

31 1774 (5), 1775 (4), 1776 (8), 1777 (12), 1778 (4), 1779 (9), 1780 (3), 1781 (19), 1782 (12), 1783 (5), 1785 (4), 1786 (2), 1787 (5), 1788 (3), 1789 (5), 1790 (3), 1791 (4).

32 Information regarding denominations was gleaned from readily available biographical lexica such as the online version of Deutsche Biographie (www.deutsche-biographie.de, accessed 22.02.2019).

Place	Received before 1773	Sent before 1773	Re-ceived after 1773	Sent after 1773	Denomination of correspondent[32]
Hamburg/ Lübeck	0	1	0	0	Gondola
Heidelberg	2	5	0	0	Chr. Mayer
Ingolstadt	4	0	0	0	Kratz, Zech
Innsbruck	2	0	0	0	Weinhart
Kremsmünster	2	4	9	19	Fixlmillner
Ljubljana	0	2	0	0	Taufferer
Madrid	1	2	0	0	Rieger
Marseille	0	1	0	0	Pézenas
Milan	0	2	0	0	Bovio, Gerra
Padua	1	1	0	0	Poleni
Paris	16	26	0	0	Lacaille, Delisle, Messier, Lalande, Huberti, De Luynes, *Journal des Sçavans*
Passau	1	0	0	0	Ritter
Pécs	3	0	0	0	Hertl
Peking	1	0	0	0	Hallerstein
Prague	4	8	0	1	Stepling
Przemyśl	1	0	0	0	Sendzimir
Rome	0	2	0	0	*Jesuit Superior General*
Schwetzingen	1	0	0	0	Chr. Mayer
Sens	1	0	0	0	De Luynes
Stockholm	0	10	0	4	Wargentin
St. Petersburg	2	4	0	0	Braun, Müller
Talvik	0	5	0	0	Hagerup, Bredal/Paus
Tobolsk	0	2	0	0	Chappe d'Auteroche
Trnava	21	17	1	8	Weiss, Kaprinai, Katona

Place	Received before 1773	Sent before 1773	Re-ceived after 1773	Sent after 1773	Denomination of correspondent[32]
Trondheim	0	9	0	0	Gunnerus, Nordal, von der Osten, Schöller, Grambow
Turku	0	0	0	1	Planman
Vardø	0	2	0	0	Eckleff
Vatican	0	1	0	0	*The Pope*
Versailles	1	0	0	0	De Luynes
Wetzlas	1	0	0	0	Zum Schlug
Vienna	0	11	0	1	Von Oëttel, Höller, Bachoff, Pilgram, *Kaiserliche Hofkammer*
Würzburg	12	1	0	0	Huberti
Total	91	151	14	105	

5.2 Weiss's Surviving Correspondence Before and After 1773

Weiss sent 39 letters, 22 before (or during) and 17 after 1773. They were addressed to only four people. The contact with Johann III Bernoulli in Berlin became more intense after 1773 (8 letters). The 18 letters sent to Maximilian Hell in Vienna, the most numerous group of letters in the pre-1773 era, were written between 1757 and 1761. Weiss's contact with Pehr Wilhelm Wargentin (in Stockholm) maintained a steady pace with 9 letters each during the pre- and post-1773 periods. Placidus Fixlmillner (in Kremsmünster) received only one letter in 1776.

Weiss received 59 letters: 27 between 1750 and 1773, and 30 between 1774 and 1784. His contact with Berlin, Mannheim and Trnava became more intense after 1773, while the number of letters received from Paris decreased. The contact with Stockholm seems to have been constant in terms of the number of received letters.

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Fig. 1 Maximilian Hell: number of received and sent letters before 1773.



Fig. 2 Maximilian Hell: number of received and sent letters after 1773.

5.3 Fixlmillner's Surviving Correspondence Before and After 1773

Fixlmillner received 40 letters from 9 cities between 1755/1764 and 1773, with the most intense year being 1771 with 11 letters.[33] He received 104 letters from 17 cities after 1773 (until 1791). The most intense years of this period were the mid-1780s.[34]

Fixlmillner sent 41 letters, of which 4 are undated and only 5 were written before 1773. Two of the latter were addressed to Jérôme de Lalande (1768) and the Jesuit Christian Rieger (1770) in Paris and three to Cajetan Jungwirth (1770–1771) in Berlin. After 1773, the destination is unknown in two cases. During this period, letters were sent to 9 cities, among which Berlin and Paris were still the most important. The addressees were often the same (around 10 to 12) people, occasionally appearing at multiple locations.

33 1755 (1), 1762 (2), 1764 (2), 1766 (5), 1767 (2), 1768 (4), 1769 (3), 1770 (3), 1771 (11), 1772 (7), 1773 (1).

34 1773 (1), 1774 (1), 1775 (1), 1776 (8), 1779 (3), 1780 (4), 1781 (5), 1782 (9), 1783 (4), 1784 (5), 1785 (10), 1786 (10), 1787 (11), 1788 (7), 1789 (7), 1790 (6), 1791 (3), 1792 (1).

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Tab. 2 Ferenc Weiss: number of received and sent letters.
Yellow = secular Catholic; Pink = Catholic bishop; Green = (ex-)Jesuit;
Turquoise = Benedictine; Dark red = Lutheran bishop; Red = lay Lutheran;
Teal = Calvinist; Grey = uncertain/not applicable.

Place	Received before 1773	Sent before 1773	Re-ceived after 1773	Sent after 1773	Denomination of correspondent
Berlin	1	1	5	7	Bernoulli
Graz	2	0	1	0	Scherffer
Kremsmünster	0	0	0	1	Fixlmillner
Madrid	1	0	0	0	Rieger
Mannheim	1	0	6	0	Chr. Mayer, Hemmer
Maur	1	0	0	0	Scherffer
Milan	0	0	1	0	Cesaris
Paris	12	0	4	0	Delisle, Lacaille, Lalande, Clairaut
Stockholm	6	9	7	9	Wargentin
Trnava	0	0	7	0	Taucher
Wien	2	18	1	0	Scherffer, Hell
Würzburg	1	0	0	0	Huberti
Total	27	28	32	17	

6. Avenues for Further Research: Digital Humanities and Traditional Hermeneutics

The study of correspondences is a well-established method in the history of science, and the traditional approach entails systematic reading of substantial amounts of correspondence with the aim of excerpting key expressions and obtain a general impression of features characteristic of a particular period, project or character.[35] A basic problem is that this is a very time-consuming task—and with often hundreds of extant letters, the risk of becoming too immersed in details and losing sight of the overall picture is manifest. Illustrations

35 To cite just two excellent examples: Sven Widmalm, A Commerce of Letters. Astronomical Communication in the 18th Century. In: Science Studies 5:2 (1992), 43–58; Georges Dulac, La vie académique à Saint-Pétersbourg vers 1770, d'après la correspondence entre J.A. Euler et Formey. In: Daniel-Odon Hurel / Gérard Laudin (eds.), Académies et sociétés savantes en Europe (1650–1800). Paris – Geneva 2000, 221–263.



Fig. 3 Ferenc Weiss: number of received and sent letters before 1773.



Fig. 4 Ferenc Weiss: number of received and sent letters after 1773.

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Tab. 3 Placidus Fixlmillner: number of received and sent letters.
Yellow = secular Catholic; Pink = Catholic bishop; Bright Green = (ex-)Jesuit; Turquoise = Benedictine; Dark Yellow = other Catholic order; Dark Red = Lutheran bishop; Red = lay Lutheran; Teal = Calvinist; Violet = Anglican; Grey = uncertain/not applicable.

Place	**Received before 1773**	**Sent before 1773**	**Re-ceived after 1773**	**Sent after 1773**	Denomination of correspondent
Augsburg	21	0	3	0	Casatti
Berlin	0	3	37	14	Bernoulli, Bode
Ensdorf	1	0	0	0	Desing
Gleink	0	0	2	2	Holmayr
Irsee	3	0	3	1	Dobler
London	0	0	1	0	Maskelyne
Mannheim	0	0	3	0	Chr. Mayer
Ober-Ensingen	0	0	2	2	Wurm
Ofterdingen	0	0	1	0	Wurm
Paris	1	2	15	5	Lalande, Jeaurat, Cassini
Polling	0	0	1	0	Schlögl
Prague	0	0	6	1	Strnadt
Passau	3	0	0	0	Chr. Rieger
Regensburg	0	0	1	0	Gerstner
Rome	2	0	1	0	Gentili
Rott	0	0	2	0	Sutor, Weigl
Sonthofen	0	0	2	0	Ammann
Salzburg	1	0	0	3	Jungwirth
St. Pölten	1	0	0	0	Heylling
Trnava	0	0	1	0	Weiss
Vienna	7	0	23	4	Chr. Rieger, Pilgram, Liesganig, Hell, Triesnecker, Pasterwiz
Total	40	5	104	32	

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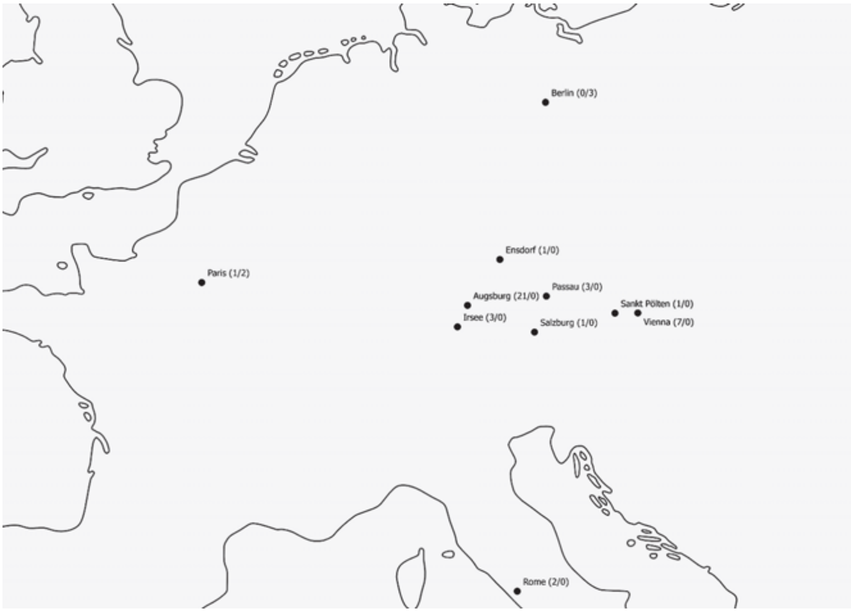


Fig. 5 Placidus Fixlmillner: number of received and sent letters before 1773.

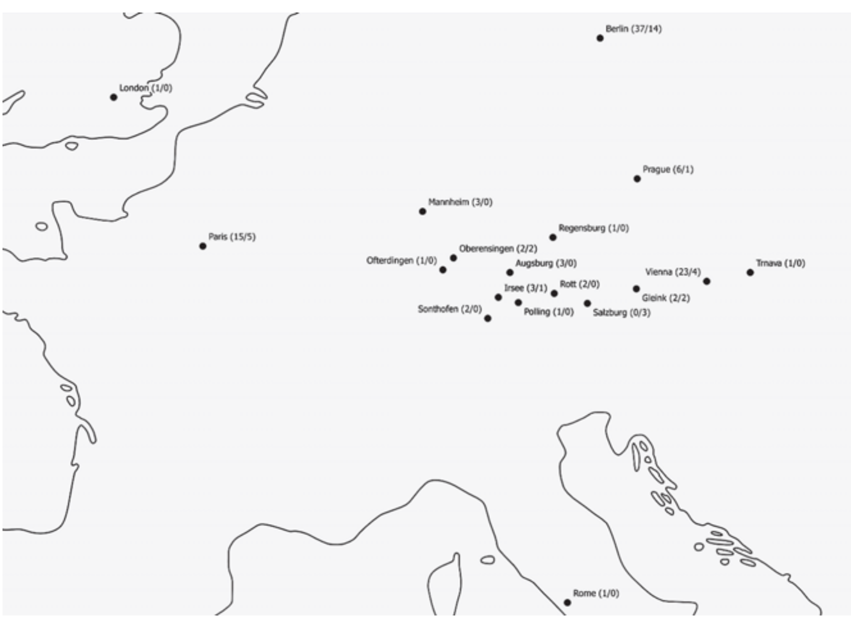


Fig. 6 Placidus Fixlmillner: number of received and sent letters after 1773.

are sometimes used in such historiographical work, but usually only as a dispensable, extraneous feature pasted in after the actual hermeneutical analysis has been completed.

In our experiment, we used systematizations and visualizations of metadata (letter written by person *x* at location *a*, addressed to person *y* at location *b*) as a starting point. The idea was to use these visualizations of correspondence networks as a means to help speed up the hermeneutical process. While the number of preserved letters turned out to be too small and fragmentary to place specific emphasis on quantitative aspects within the project, the systematization did help to direct our attention towards gaps that *may* be indicative of actual ruptures of contact. László Kontler's recent study of Hell's *Ephemerides* points out a strong presence of French astronomy in the journal up until about 1773 that disappears soon thereafter.[36] This coincides with our data. French astronomers virtually disappear from the correspondence of both Hell and Weiss after the suppression of the Society of Jesus. France, a leading agent in the ideological battle against "Jesuit learning", dwindled away as an ally in the quest for corresponding observations. For the Benedictine Fixlmillner, such a pattern is barely distinguishable or at least less pronounced. Their strong and stable contacts with Berlin and Stockholm prove that both Weiss and Hell maintained a transnational and transconfessional correspondence after 1773; it merely shifted away from France. There may also have been other, more personal reasons for this: After returning to Vienna from his Venus transit expedition in Denmark and Norway, Hell soon found himself engaged in a fierce battle to defend the reliability of his observations made during the trip—as well as his own calculations of the Sun-Earth distance that used his own observations as a crucial set of data along with corresponding observations made in other parts of the world. During this controversy, Hell targeted a leading network figure in French astronomy in particular: Jerôme de Lalande.[37] Fixlmillner remained in contact with both Hell and Lalande after the dispute, in which he played no part. As a former Jesuit associated closely with Hell and his plight, Weiss may have been partially affected. A careful reading of the surviving letters from this particularly heated period of scientific controversy paired with religious upheaval would be necessary to test this hypothesis, however—and the maps of the correspondence networks might have the potential to point the scientific glance in the right direction in terms of which letters to study.

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36 Kontler, Uses.

37 Per Pippin Aspaas, Le Père Jésuite Maximilien Hell et ses relations avec Lalande. In: Guy Boistel / Jérôme Lamy / Colette LeLay (eds.), Jérôme Lalande (1732–1807). Une trajectoire scientifique. Rennes 2010, 129–148.

The datasets and visualizations presented above are no more than an outline of how such visualizations might potentially be used. Full-scale scrutiny would require much larger datasets in order to rule out individual and local contingencies as well as the problem of the fragmentary preservation of source materials. As with any historical inquiry, it is important to consider the source materials underpinning the map. Ideally, studies should be performed on the correspondence networks of a representative selection of astronomers from various religious denominations whose professional correspondences remain *entirely* (or at least largely) *intact*. For such a large-scale project, one can safely assume that visualization tools would have the potential to aid historians in their endeavour to recognize various trends and acute ruptures of contact. Two characters situated on the fringes of this study, but simultaneously at the centre of events in eighteenth-century astronomy, come to mind.

In 1764, Johann III Bernoulli (1744–1807) of the famous Basel-based family of natural philosophers and mathematicians was inducted into the Prussian Academy of Sciences in Berlin,[38] where he was soon appointed Astronomer Royal and director of the academy's observatory. In this capacity, he made his mark as a disseminator of scientific news from all over Europe and beyond. His *Lettres Astronomiques* (1771), written during a Grand Tour of Britain and Europe in 1768/69, as well as the journals *Recueil pour les Astronomes* (1771–1776) and *Nouvelles Littéraires des divers pays* (1776–1779) with their concomitant "Necrologues" and "Listes des astronomes actuellement vivans" are invaluable sources for historians of science. From the early 1780s onwards, Johann III published more frequently in German and extended his range of interest far beyond astronomy proper. Particularly noteworthy are his multi-volume *Sammlung kurzer Reisebeschreibungen und anderer zur Erweiterung der Länder- und Menschenkenntniss dienender Nachrichten* (1781–86) and the *Leipziger Magazin für reine und angewandte Mathematik* (with K. F. Hindenburg, 1786–88). Bernoulli often quoted letters in the periodicals he edited. In the same way that a letter listing astronomical observations and sent to Hell in Vienna might end up being printed in the *Ephemerides*, there are numerous examples of letters from Bernoulli's correspondents that were published in his various periodicals. A fundamental difference, however, is that in Bernoulli's case, virtually every letter is preserved intact. His entire incoming correspondence is well organized and kept at the Basel University Library. If one wished to address the question

38 Part of the text of this paragraph has been published earlier in a book review for the yearbook xviii.ch. See Per Pippin Aspaas / Simone Dumont / Jean-Claude Pecker (eds.), Jérôme Lalande, Mission à Berlin: Lettres à Jean III Bernoulli et à Elert Bode (Paris 2014). In: xviii.ch. Jahrbuch der Schweizerischen Gesellschaft für die Erforschung des 18. Jahrhunderts 8 (2017), 107–109 (extended manuscript version available at http://hdl.handle.net/10037/12581, accessed 22.02.2019.)

of correspondence before and after 1773 for a character outside of Catholic Europe whose family background was Huguenot (Calvinist), Bernoulli would be an obvious candidate. His dedicated focus on astronomy proper waned over the course of the 1780s, however, and the parts of his correspondence dealing with other topics (history, geography, physics, etc.) would therefore have to be manually excluded so as to obtain a representative picture of his "corresponding observations" of astronomical content.[39]

In Stockholm, Bernoulli's counterpart Pehr Wilhelm Wargentin (1717–1783), secretary of the Royal Swedish Academy of Sciences and director of the Stockholm observatory since its construction in the early 1750s, left behind a similarly vast correspondence. His own research articles focused on the moons of Jupiter; corresponding observations of this particularly intriguing phenomenon made up much of the content of his incoming letters, particularly from foreign correspondents. In his role of secretary of the Academy, he edited not only the official Swedish *Almanak* but also the scientific journal *Kungliga Vetenskaps Academiens Handlingar*, with four issues appearing per year during the entire timespan from 1750 until Wargentin's death in 1783.[40] Wargentin is a special case when it comes to outgoing letters as well: He kept a record of his letters to foreign correspondents, meaning that this part of his astronomical correspondence can easily be reconstructed on a metadata level (addressed to whom, where and when) despite the loss of many letters. All incoming letters to Wargentin are kept at the Centre for the History of Science of the Royal Swedish Academy of Science in Stockholm. A similar, purely astronomical subset as described above in regard to Johann III Bernoulli could be generated for Wargentin's correspondence.[41]

Entering the relevant metadata from Wargentin and Bernoulli into an Excel sheet (or another data program) would be an obvious place to start. However, such raw data barely provide any information beyond the purely quantitative. In our attempt to detect patterns of transdenominational communication, we

39 During an archival visit to Basel in February–March 2017, P.P. Aspaas photocopied the entire astronomical correspondence of Johann III Bernoulli. There is work still to be done in terms of metadata plotting and organizing before an analysis of this vast corpus can be undertaken.

40 All issues were translated into German and published in Hamburg and Leipzig as well: Der Königl. Schwedischen Akademie der Wissenschaften Abhandlungen aus der Naturlehre, Haushaltungskunst und Mechanik […]. Aus dem Schwedischen übersetzt. While there are a fair number of astronomical articles in this series, the actual observations that are included were mostly made on Swedish soil.

41 P.P. Aspaas visited this archive on two occasions in October 2006 and December 2017. Another visit and substantial organizing of metadata will be needed to prepare a comprehensive tabular overview and visualization of Wargentin's astronomical correspondence network.

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need to tag the various correspondents according to their religious denomination and move on from this basic data to visualization. The most standard visualization tool is the "frozen" geographical map, and it is by and large what distinguishes most well-known studies of early modern correspondences such as the Mapping the Republic of Letters project. But by now, Digital Humanities has moved further along. Dynamic visualization tools are more frequently used for the entire research process; a simple "frozen" view is often misleading. Video clips visualizing trends over time (in other words, combining the temporal and the spatial) often reveal more than words accompanied by still pictures encompassing multiple years, which is what we have presented here. Venturing into the terrain of the purely optical entails the risk of oversimplifying complex historical contexts and processes, however. As humanists with an interest in the digital, we must nevertheless remain true to the assets of traditional hermeneutical analysis. Digital tools should be employed as an aid for the humanities, not as a substitute for careful inquiry. There are thus essentially two ways in which to expand this research: One is to supplement the tabular overview and accompanying visualizations with additional data, such as information on letters whose originals are missing but which can be verified to have existed; another is to actually read the letters and see whether the story that can only be glimpsed through the tabular overviews and visualizations has some substance to it.

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Jonathan Singerton

A Revolution in Ink

Mapping Benjamin Franklin's Epistolary Network in the Habsburg Monarchy, 1776–1789

It is a popular misconception that there was very little crossover between the American Revolution and the Habsburg Monarchy during the tumultuous Age of Revolutions. Benjamin Franklin, the quintessential face of the American Revolution, enjoyed a substantial connection to the lands of the Habsburg Monarchy through his extensive epistolary network. Between 1776 and 1789, Franklin received at least 256 letters from 96 individuals residing throughout Central Europe and in all corners of the vast Habsburg-controlled imperium, and sent 49 letters in reply to 16 of these people. Based on estimates, this exchange amounted to 1.6% of Franklin's total (incoming and outgoing) correspondence.[1] It represents the most immediate contact between an American revolutionary—that is, a person supporting the patriot cause in the American War of Independence—and people living in the Habsburg realm. No other American received such extensive correspondence in terms of volume or number of individuals from the Habsburg Monarchy during this period. John Adams holds a distant second place with only three known letters, significantly less than Franklin. This meant that Franklin overwhelmingly became the focal point for the expression of Habsburg interest during and after the American Revolution.

The existence of such a correspondence network invites us to view both the American Revolution and the Habsburg Monarchy from a different angle. Seen through the multitude of letters written to Franklin, both the conflict and his person appear in a different light, and we can appreciate the resonance of a revolution and a revolutionary's reputation in an unlikely place. Furthermore, while other aspects of Franklin's correspondence networks have been well examined, his ties to Central Europe have remained a lacuna. Historians

1 I would like to acknowledge the generous support of the Botstiber Institute for Austrian-American Studies at the Dietrich W. Botstiber Foundation, which made research for this article possible. I am also indebted to Assistant Editor Kate Ohno and Professor Emeritus Jonathan Dull of the Franklin Papers project at Yale University for reading an earlier version and providing comments. Caroline Winterer, Where is America in the Republic of Letters? In: Modern Intellectual History 9 (2012), 3, 608. Such estimations originally stem from the dedication behind the Franklin Papers series based at Yale University: http://franklinpapers.org/, accessed 10.09.2018.

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at Stanford University have conducted fascinating research into Franklin's extensive correspondence, making in-roads with the help of digital tools.[2] They have delved deeply into his "London years" (1757–1775), but Franklin's later correspondence—especially during the American Revolution—still remains ripe for exploration.

The same can be said for studies of epistolary networks within the Habsburg Monarchy. The Republic of Letters often ends on the map where the Monarchy begins, and the connective networks utilised by many residents in places like Vienna and Prague are not visible in intellectual histories today.[3] But the rediscovery of this 'forgotten land' of the Republic of Letters has already begun, with imperial librarians and freemasons serving as guiding examples.[4] New research on enlightened networks rests upon the new conceptualisations of the Republic of Letters arising from the inclusion of religious and monastic orders.[5] This has led to a more robust picture of the Republic of Letters within Central Europe and the wider epistolary networks present there. For historians engaging with the Habsburg, this article supports their efforts by contributing an examination of the connections between Habsburg Monarchy subjects and an enlightened American. For American scholars, it presents a new perspective on Benjamin Franklin and points the way to future research on his epistolary life during the American Revolution.

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2 Claire Rydell / Caroline Winterer, Benjamin Franklin's Correspondence Network, 1757–1763. Mapping the Republic of Letters Project, Stanford University, October 2012: http://republicofletters.stanford.edu/casestudies/franklin.html, accessed 10.09.2018.

3 Vittoria Feola, Paris, Rome, Venice, and Vienna in Peter Lambeck's Network. In: Nuncius 31 (2016), 108–110.

4 Feola, Paris, see footnote 3, 111–128; Karlheinz Gerlach, Österreichische und preußische Freimaurer im Jahrhundert der Aufklärung 1731/1738–1795/1806: Gemeinsamkeiten und Gegensätze. In: Michael Fischer et al. (eds.), Aufklärung, Freimaurerei und Demokratie im Diskurs der Moderne. Frankfurt am Main 2003, 1–32; Joachim Berger, European Freemasonries, 1850–1935: Networks and Transnational Movements. In: IEG Mainz (ed.), Europäische Geschichte Online [EGO]. 2010, http://www.ieg-ego.eu/bergerj-2010-en, accessed 23.12.2018; Gauvin Alexander Bailey, 'Bright Shining as the Stars': Spiritual Rococo in Central Europe. In: Gauvin Alexander Bailey, The Spiritual Rococo: Décor and Divinity from the Salons of Paris to the Missions of Patagonia. Abingdon 2014, 109–163. See also Bernhard Woytek, Joseph Eckhel and his network of correspondents: a research project on numismatics in the Age of Enlightenment. In: Maria Caccamo-Caltabianno et al. (eds.), Proceedings of the XV International Numismatic Congress of 2015. Rome 2017, 299–302.

5 Ulrich L. Lehner, Enlightened Monks: The German Benedictines 1740–1803. Oxford 2011; Thomas Wallnig, Gelehrtenkorrespondenzen und Gelehrtenbriefe. In: Josef Pauser / Martin Scheutz / Thomas Winkelbauer (eds.), Quellenkunde der Habsburgermonarchie 16.-18. Jahrhundert. Vienna 2004, 813–827; see also the 'Brüder Pez' project at https://pezworkshop.org/about/, accessed 12.09.2018.

As Caroline Winterer points out, the process of mapping epistolary networks in geographic networks or bar charts and tabular representations essentially serves to "reframe our textual archive in a spatial dimension."[6] Such transformation of historical records allows us to more clearly pinpoint the broader and often hidden structures of an individual's connections.[7] Digital analysis can provide a more focused numerical and geographical reference point for future study. In this sense, a mapping of 1.6% of Franklin's 'revolutionary period' network may already identify certain general trends that future work on his networks by other scholars will be able to corroborate. In other places, specific letters lead us to note the peculiarities of this regional network; some of these particularities that appear especially noteworthy are described below. The aim of this article is to provide the reader with an insight into the wider transatlantic connections of Central Europe by revealing the extent of Franklin's interaction with people living in the Habsburg Monarchy.

1. The 'Ur-Franklin' and His Reflection in the Epistolary Network

Franklin's persona should not be underestimated in regard to understanding how this network came about. His fame as a scientist predated the Revolution, even in Central Europe, and his scientific works were known and being debated throughout the Habsburg lands since the 1760s. His electrical theories in particular attracted the attention of Habsburg scholars and administrators. In Hungary, schoolbooks covered his theories, and the tallest structures were equipped with Franklin's new lightning rod invention.[8] Within just a few years, countless towns and cities across the Habsburg Monarchy followed suit. In Sienna, the main church received its new adornment by order of Grand Duke Pietro Leopoldo so that "members of the *Academia dei Fisiocritici* and the curiously roused populace could witness the practical demonstration of Franklin's discovery."[9] In short, Franklinian science was all the rage in the Habsburg Monarchy.

At the same time, Franklin's literary fame began to grow, and he would soon become the most-translated American author in the Habsburg Monarchy.

6 Winterer, America, see footnote 1, 598.

7 For a recent example, see Robert Gramsch-Stehfest, Entangled Powers: Network Analytical Approaches to the History of the Holy Roman Empire during the Late Staufer Period. In: German History 36 (2018), 3, 365–380.

8 Géza Závodszky, American Effects on Hungarian Imagination and Political Thought 1559–1848, trans. Amy Módly. New York 1995, 14–16; Antonio Pace, Franklin and Italy. Philadelphia 1958, passim.

9 Adam Wandruzska, Leopold II. Vienna 1965, II, 59.

In Habsburg Milan, the polymath Carlo Amoretti published passages from Franklin's *Poor Richard's Almanac* that he had acquired personally.[10] The same passages reappeared in Vienna two years later with Johann Ferdinand Baumgartner's translation of the *Almanac* into German.[11] Further translations into French as well as the original English version also reached the Habsburg readership. Franklin's texts were often deposited in the Imperial Court Library, nowadays the Austrian National Library, where they still reside.[12] In 1792, a compendium listing the most notable destinations for travellers in Vienna described these holdings as "American writings from the actual symbols and figures mentioned in [William] Robertson's *History of America*."[13]

Over the course of the American Revolution, however, Franklin's renown as a scientist was quickly surpassed by his fame as a revolutionary. This is reflected in his Habsburg correspondence: only a minority of Franklin's correspondents—numbering eleven, or 4% of the total network—were concerned with scientific matters. This includes some borderline cases like Dr. Henri Thibaut Hennessienne, a secretary to the French ambassador in Vienna, who wrote to share (for a fee) his alleged discovery of a new type of gunpowder useful to the Americans.[14] During the American Revolution, the majority of Habsburg correspondents wrote to Franklin primarily for news about the Revolution itself, for help with emigration to America, or to solicit his support for their trading plans. They now no longer saw him as the inventor of the lightning rod, but as the man at the heart of the American Revolution. As the Revolution wore on, even distinguished scientists within Franklin's Habsburg network more frequently concerned themselves with political issues in their correspondence with him. Enlightened discourse played a second fiddle to political gossip. We can thus view the American Revolution as the point at which Franklin shifted from being a scientific individual known only to small sections of society to a political character known to a broader, more diverse and international audience. A wider analysis of his correspondence during the

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10 The selection was Franklin's 'Ways to Wealth'. See Antonio Pace, Franklin and Italy since the Eighteenth Century. In: Proceedings of the American Philosophical Society 94 (1950), 3, 243–244.

11 Johann Ferdinand Baumgartner, Das Mittel reich zu werden – deutlich erwiesen in einer Vorrede eines alten Almanachs aus Pennsylvannien. Vienna 1777.

12 Benjamin Franklin, Experiments and Observations on Electricity made at Philadelphia in America. London 1751; Oeuvres. Paris 1773; Sämmtliche Werke Vols. I–III. Dresden 1780; Kleine Schriften, trans. G. Schatz. Weimar 1794; The Way to Wealth. Paris 1795; Vie écrite par lui-même [Autobiography]. Paris 1797.

13 [Anonymous], Nützliches Adreß- und Reisebuch oder Archiv der nöthigsten Kenntnisse von Wien für Fremde und Inländer. Vienna 1792, Chapter VII, 238.

14 Hennessienne to Franklin, 28th September 1778. In: Claude A. Lopez (ed.), The Papers of Benjamin Franklin [hereafter PBF]. 27, New Haven 1988, 470.

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American Revolution confirms this view, as an increasing number of people connected him to a wider, less scientific and less 'Atlantic-orientated' network. This fundamental shift is one of the main findings resulting from the study of his Habsburg network.

Tab. 1 List of works on Franklin's scientific theories in the Habsburg Monarchy, 1776–1790.

Author	**Publication Title**	**Place**	**Year**
Ludwig Christian Lichtenberg	*Verhaltungsregeln bey nahn Donnerwettern, nebst den Mitteln sich gegen die schädlichen Wirkungen des Blitzes in Sicherheit zu setzen*	Graz	1776
Joseph Stepling	*Anmerkung über die elektrischen Ableiter*	Prague	1777
Heinrich Georg Hoff	*Kurze Biographien oder Lebensabriße merkwürdiger und berühmter Personen neuerer Zeiten von unterschiedlichen Nazionen und allerley Ständen*[15]	Brno	1782
Joseph von Weber	*Unterricht von den Verwahrungsmittel gegen die Gewitter für den Landmann*	Salzburg	1784
Franz Paula Schrank	*Naturhistorische Briefe über Österreich, Salzburg, Passau, und Berchtesgaden*[16]	Salzburg	1785
Marsillo Landriani	*Abhandlung von Nutzen der Blitzableiter*	Vienna	1786
Dominikus Beck	*Faßlicher Unterricht Gebäude auf eine leichte und sichere Art vor dem Einschlagen des Blitzes zu bewahren*	Salzburg	1786
Johann Samuel Halle	*Magie, oder die Zauberkräfte der Natur, so auf den Nutzen, und die Belustigung angewandt worden (Vol. III)*	Wien	1787
'D. E. G.'	*Dr. Benjamin Franklins erweitertes Lehrgebäude der natürlichen Elektrizität*	Vienna	1790

Nevertheless, Franklin's fame as a scientist within the Habsburg Monarchy was enhanced by his revolutionary undertakings. In some ways, it may even be possible to say that Franklin's scientific legacy was made real in the Habsburg Monarchy by his revolutionary actions. Publications in the Habsburg lands dealing with his studies on lightning, for example, increased only after the American War of Independence had begun, as the following table demonstrates.

15 Pages 60–71 deal with Franklin's population theories as discussed with Peter Collinson in the 1730s.

16 Achter Brief aus Zill im Zillertal (Tyrol), Reise von Salzburg nach Reichenhall – Über die vielspizigen Wetterableiter, 134–152.

Between 1776 and 1790, at least nine books on Franklin's lightning rod or his electrical theories appeared in Prague, Graz, Salzburg and Vienna.[17] The most intensive period of interaction with his ideas in print was during the 1780s, when the majority of these texts appeared. I would argue that the timing we see here is not at all incidental. It is plausible that Franklin's rising fame brought about by his involvement in the Revolution helped to generate further discussion about his scientific theories. In this regard, epistolary networks certainly helped: Ludwig Christian Lichtenberg, who published one of the treatises on electricity in Graz, was closely connected to a wider international scientific network that followed the progress of the American Revolution. His better-known younger brother Georg Christoph Lichtenberg maintained a personal news network through his circle of friends in London, which included Sir Francis Clerke, an aide-de-camp to General Burgoyne.[18]

The American Revolution further cemented Franklin's scientific reputation within the Habsburg Monarchy and this revolutionary fame entailed a renewed impression of him among many Habsburg individuals. Newspapers within the Habsburg Monarchy began covering his revolutionary exploits early on, starting with the 'Cockpit Trial' in 1774. This 'trial' took place as a result of Franklin leaking letters to American publishers that showed a local colonial governor had encouraged the British Parliament to crack down on colonists protesting the new unpopular taxes. Franklin's actions provoked a maelstrom of anger and criticism towards the colonial governor in Massachusetts, further inflaming an already tense situation. British ministers held Franklin accountable, and he was raked over the coals during a Privy Council hearing by the Solicitor General, Alexander Wedderburn. Rumours in Vienna distorted the severity of Franklin's actions, and as a result the Viennese were unsure whether Franklin was complicit in organising the resistance in North America or whether he was simply the government's scapegoat. One of his Viennese correspondents sought Franklin's own word on the matter[19], and Franklin's fellow Freemasons in Vienna also followed the news with avid interest.[20] Indeed, the importance of the Habsburg correspondents within this transition becomes clear if we look

17 Although Salzburg was not part of the Habsburg Monarchy at the time, it is included here since the work published there undoubtedly had a reception in the neighbouring Austrian alpine regions.

18 Lichtenberg to Johann Andreas Schernhagen, 10th February 1777. In: Ulrich Joost (ed.), Georg Christoph Lichtenberg: Briefwechsel. Munich 2004, III, 691–692.

19 Jonathan Singerton, "Some of Distinction Here Are Warm for the Part of America": Knowledge of and Sympathy for the American Cause in the Habsburg Monarchy 1763–1783. In: Journal of Austrian-American History I (2017), 2, 146–148.

20 Haus-, Hof- und Staatsarchiv, Kabinettsarchiv, Vertrauliche Akten, K. 70, fols. 2–11; fols. 129–136.

at it as part of a greater trend. An examination of Franklin's Habsburg epistolary network demonstrates the workings of his rising revolutionary fame and the way in which ordinary people throughout Central Europe came to view him.

2. Benjamin Franklin's Habsburg Network: A Statistical Overview

Between 1772 and 1789, Franklin received 256 letters from 96 people in the Habsburg Monarchy. It is important to note that this only includes individuals who either resided permanently in the Habsburg Monarchy or were originally from the Habsburg Monarchy. Two Englishmen who were stranded in Livorno and wrote to Franklin for help are thus not included in this number, nor are the roughly 30 Americans who waited out the American Revolutionary War in the Austrian Netherlands.[21] Very few of the 96 individuals received a reply: notorious for never keeping up with his correspondence, Franklin replied to only 16 individuals in 49 letters. The geographic distribution of this epistolary network extended to all corners of the Habsburg Monarchy. From the so-called Hereditary Lands—that is used to say here, the dynastically held lands in Central Europe such as Austria, Bohemia, and the Littoral but also including Hungary—through the Austrian Netherlands and all the way to Habsburg Lombardy and Tuscany, letters came from unexpected locations. The most geographically remote origins of letters within the network were Bochnia, nowadays in southern Poland, and Košice in modern-day Slovakia.[22] There may of course have been others that fell foul to the postal deficiencies of eighteenth-century Europe. There were undoubtedly many letters that are not preserved, since they are referenced in existing letters. Those that can be identified in this fashion have been included in the dataset.

When represented visually, Franklin's epistolary network in the Habsburg Monarchy is clearly divided into three distinct groups: from left to right, these are the correspondence from the Austrian Netherlands, from Habsburg Lombardy and Tuscany, and from the Hereditary Lands in Central Europe. The non-bracketed data points denote letters from places such as London, Bordeaux and Paris where Habsburg subjects either resided—such as the Habsburg ambassador to Great Britain—or that they passed through on their travels. In this regard, Paris formed the second largest metropolis from which Habsburg

21 See "American Interests in the Austrian Netherlands". In: Jonathan Singerton, Empires on the Edge: The Habsburg Monarchy and the American Revolution. University of Edinburgh: unpublished PhD thesis 2018, 92–98.

22 Hoppe to Franklin, 19th July 1783, American Philosophical Society Archives [hereafter APS], Mss.B.F.85, Series VII; Zinner to Franklin, 26th October 1778, APS, Mss.B.F.85, Series III.



Fig. 1 Visual representation of Franklin's epistolary network in the Habsburg Monarchy.[24]

writers contacted Franklin, with 30 letters or nearly 12% of the overall total. The most-connected city was Vienna with 105 letters (41%). Within the Hereditary Lands, Vienna functioned as a major hub besides other cities like Prague, Kosice, and Trieste. Individual isolated letters arrived from the border regions of the Habsburg Monarchy, like Barboz near Mohács in southern Hungary. From there two Habsburg army officers offered their military expertise to the United States via Franklin, enclosing a letter of praise for Washington.[23] This demonstrates quite remarkably how deeply Franklin's public reputation and news of the Revolution had permeated Central Europe.

23 Gaisberg and Stahel to Franklin, 29th March 1780, APS, Mss.B.F.85, Series V.

24 Produced using the Palladio software developed by the Humanities + Design Lab at Stanford University http://hdlab.stanford.edu/projects/palladio/, accessed 22.02.2019. All maps and network charts in this article were created by the author.

Tab. 2 Numerical breakdown of letters received by Franklin from the Habsburg Monarchy, 1772–1789.

Region	Amount	Over-all %	Peak Year	Highest Freq. Individual
Hereditary Lands	131	51%	1783	Dr. Jan Ingenhousz
Austria	105	80%	1778 & 1783	Dr. Jan Ingenhousz
Bohemia	9	7%	1779	Prof. František Steinsky
Hungary	9	7%	1783	Baron Janus Zreny
Littoral	8	6%	1783	Domenico Belletti
Austrian Netherlands	49	19%	1783	François Jacques Bauwens
Lombardy & Tuscany	32	13%	1783	Filippo Mazzei
Other[25]	44	17%	1784	Francesco Favi
	256			

A numerical overview offers additional insights. Firstly, the Hereditary Lands provided the greatest letter output in the network. Within this category, Franklin's close friend Dr. Jan Ingenhousz was the most frequent correspondent. Ingenhousz, who was Maria Theresa's physician and a leading scientific figure in Vienna, sent exactly a quarter of all of Franklin's incoming correspondence from the Habsburg Monarchy and received the majority (60%) of Franklin's replies within this network. This key connection will be examined in more detail below. Without Ingenhousz's prolific correspondence with Franklin, the Austrian Netherlands would have been the greatest regional source within the network.

We can also note that 1783 was the peak year in terms of letter volume for most regions, with the only exceptions being 1778 (which tied for first in the Austrian lands) and 1779 for Bohemia. The popularity of 1783 reveals that most people sought Franklin's help when the United States either appeared on the verge of becoming a fully recognised independent state or had already been proclaimed one by the Treaty of Paris. Indeed, every single letter written to Franklin from the Austrian Littoral arrived during this year. Merchants like the eager Domenico Belletti, who penned six of the total of eight letters in a furious

25 This includes Paris, where many correspondents visited Franklin, but also London and Bordeaux, where he received letters from Habsburg subjects like the Hungarian Mihály Kováts (to Franklin, 13th January 1777, APS, Mss.B.F.85, Series II).

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campaign to win Franklin's support, sought to secure the American's help in establishing the first trading links with the new American nation.[26]

Finally, we can also see this as part of a bigger trend. The rightmost column shows the most prolific authors from each region, and a tendency immediately becomes apparent: regions more concerned with trade, like the port city of Trieste in the Austrian Littoral or the industrial zones in the Austrian Netherlands, produced merchants as the most frequent writers of letters to Franklin. This once again reinforces the importance of the year 1783, when new commercial opportunities seemed in the offing and older commercial networks created by the American Revolutionary War began to fail. These merchants saw Franklin as the key to expanding their business. François Jacques Bauwens (sometimes Frans Bouens or Bowens) resided in the Habsburg free port of Ostend, which experienced a dramatic increase in shipping traffic due to the neutrality of the Habsburg Monarchy during the American War of Independence. Bauwens, a merchant and postmaster in Ostend, functioned as a middleman, forwarding sensitive mail to Franklin and other Americans from England.[27] In 1783, sensing new opportunities offered by the independence of the United States, Bauwens twice asked Franklin to make him the American consul in Ostend.[28]

Meanwhile, Franklin's most frequent correspondents in the other parts of the Habsburg Monarchy consisted primarily of intellectuals and officials. In the latter case, this included those who worked for the imperial administration in some capacity or another. Francesco Favi is a prime example: he served within the Parisian delegation of the Grand Duchy of Tuscany, eventually becoming its consul in 1780, but also functioned as representative for the viceroys of the Austrian Netherlands and as consul for the independent Republic of Ragusa. Favi was able to switch between his many hats to communicate with Franklin unofficially when diplomatic norms prevented official communication between American representatives and the Habsburg ambassador in Paris. Habsburg officials became acutely aware of this advantageous position early on when Emperor Joseph II wished to meet Franklin during his journey to France in

26 Belletti to Franklin, 21st February, 7th April, 11th April, 14th April, 25th April, 15th September 1783, APS, Mss.B.F.85, Series VII. See also Chapter Four: "A New Set of Merchants – The Development of Postwar Commerce between the Habsburg Monarchy and the United States of America 1783–1785". In: Singerton, Empires, see footnote 21, 114–138.

27 See Franklin's correspondence with Thomas Digges in general.

28 Bauwens [Bowens] to Franklin, 30th April 1783. In: Ellen R. Cohn (ed.), PBF. 39, Yale 2008, 526–527.

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1777. Favi acted as the linchpin for arranging the meeting and corresponding with the newly arrived revolutionary from America.[29]

Intellectuals formed another major group. Apart from Ingenhousz, Professor František Steinsky of Prague was one of the small number of persons in the network who actually met Benjamin Franklin in Paris. Taking a detour during his European tour, Steinsky came to have Franklin sign his autograph book, whereupon a cordial friendship developed between the two men.[30] Their correspondence continued after Steinsky's return to Prague, from where he connected Franklin to other intellectuals and officials in the region. This fortunate encounter in Paris transformed Steinsky into Franklin's key connection to the Bohemian intelligentsia. Franklin regularly kept Steinsky abreast of the latest scientific fascinations among his friends throughout Europe, but he was also keen to learn more about the interests of Habsburg scholars, telling his friend that "you would oblige me infinitely by informing me of the new useful discoveries made in your country."[31] Steinsky, as shown below, did so throughout the remainder of the correspondence.

Franklin maintained a similar connection to individuals in Košice. Johann Zinner, Professor of Universal History at the Royal Academy in Košice, shared with Franklin several books about the American Revolution that he had composed himself.[32] Zinner bemoaned the frequent misinformation to be found in the international newspapers, one of the key motivations for his works. "Benedict Arnold," he pointed out with some exaggeration, "is sometimes made a German of Mainz, sometimes an American of Connecticut, sometimes a lapsed Capuchin monk, and sometimes a grocer of Norway."[33] Zinner completed his

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29 See Jonathan Singerton, American Revolutionary and Revolutionary Emperor: Benjamin Franklin and Joseph II. In: Austro-American Blog, Botstiber Institute for Austrian-American Studies: http://botstiber.org/benjamin-franklin-joseph-ii/, accessed 17.09.2018.

30 Franklin: Entry in François Steinsky's Autograph Book, 27 January 1781. In: Barbara B. Oberg (ed.), PBF. 34, Yale 1998, 316.

31 "Vous m'obligeriez infiniment en m'informant des nouvelles Decouvertes utiles faites en votre Pays." Franklin to Steinsky, 23rd November 1782, Literární Archiv Památníku národního písemnictví, Fonds F. A. Steinského 1760–1811, 15/5.

32 Latin was the official scholarly and administrative language in Hungary at the time. The titles were given as "Notitia Historica de Coloniss Foederatis in Americae" and "De Viris Illustribus Americae". These were presumed lost, but I have located two manuscripts entitled "Notitia historica de coloniis Americae Septemtrionalis deducta ab eorum primordio ad nostra usque tempora" (1783) and "Versuch einer Kriegsgeschichte der Verbundenen Staaten von Nordamerika welche auf original Briefen und Schriften gegründet" (1784) in the Public Library of Ján Bocatius in Košice.

33 "[…] particulierment de Mons. Arnold: on le fait tantot un Allemand de Maienz, tantot un Ameriquain de Connecticut, tantot un Capucin cidevant, tantot un epicier de Norvich." Zinner to Franklin, 26th October 1778, APS, Ms B F85, Series III.

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texts with Franklin's help. Several other intellectual works reached Franklin from Košice: Baron Janus Zreny sent a long essay entitled '*Reflexions militaires sur la guerre de l'Amérique*', which detailed his tactical and strategic recommendations that would ensure, in his view, an easy American victory.[34] Designed to assist the Americans, the essay was also a way of vaunting his own military expertise. It is clear that Zreny, like many others, wrote with an agenda in mind; his essay was accompanied by a letter offering to serve in Washington's army. From his letter, we can glean that Zreny possessed substantial military experience and a high level of intellect. Almost nothing is known about him aside from the letter, however; we cannot even be certain that his title was not fabricated.[35] In any case, people like Zreny and Zinner utilised their backgrounds in attempts to obtain what they desired from Franklin. Whether it was a commission in the continental army or assistance for writing books, they extolled their intellect and love of America in the foreground of their letters.

Language was an important factor in facilitating the epistolary network's structure. While Franklin occasionally instructed his secretary to respond in French, he generally wrote in English himself. The most common language in his incoming mail was English as well: 48% of all letters to Franklin were written in English (123 letters), followed closely by French (120), with Italian (8), Latin (4) and German (1) used far less frequently. The fact that Franklin's Habsburg network most often corresponded in English is surprising, but attributable primarily to the sheer volume of letters (61) written by Jan Ingenhousz, all of which were in English. Ingenhousz thus accounts for the lion's share of English letters, and if he is removed from the equation, the percentage of English-language correspondence drops to 23% overall, or less than a quarter. This is still a remarkably high percentage when compared to the 16% of incoming letters from Franklin's Prussian network that were in English.[36] Ingenhousz, with his base in Vienna, was a key figure in Franklin's epistolary network.[37] The Stanford team noted the popularity of French within Franklin's earlier 'London

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34 Baron Janus Zreny to Franklin, 5th October 1781, APS, Mss.B.F.85, Series VI.

35 I have communicated extensively with Hungarian and Slovak archivists on the matter. The best possible explanation is that Zreny hailed from the famous Croat noble family of Zrinsky through possible mutations like Zrinii or Zrino. There is no documentary evidence to support these ideas, however. Examination of Zreny's actual signature on the letters kept by the American Philosophical Society in Philadelphia proves that there are no spelling or calligraphic inaccuracies.

36 Franklin received a total of 38 letters from Prussian authors, 31 of which were written in French, 6 in English and 1 in Latin.

37 For the Ingenhousz-Franklin link, see Timothy K. Conley / Melissa Brewer-Anderson, "Franklin and Ingenhousz: A Correspondence of Interest," Proceedings of the American Philosophical Society 141 (1997), 3, 276–296.

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Years' network at a time when "French was displacing Latin as the international language of learned communication and international diplomacy."[38] Franklin's Habsburg network thus perhaps portended the later switch to English as a *lingua franca*.

At the same time, this suggests that many people within the Habsburg Monarchy could comprehend and communicate well in English. Even leaving aside Ingenhousz, the Austrian region featured the largest number of English letter writers followed by Lombardy, Tuscany, and the Austrian Netherlands. People in the Austrian lands also sent half of the letters written in Latin, to which Franklin never replied. The second most popular language in Austria, like in the network as a whole, was French. Bohemia's linguistic homogeneity was the greatest of all regions, with all letters being written in French. Indeed, French was the most common correspondence language in all the other Hereditary Lands. The majority of French letters came from the Austrian Netherlands, however, which is understandable given the linguistic heritage of the region and the high proportion of merchants who wrote to Franklin from it. Perhaps more surprisingly, Lombardy and Tuscany also produced a large number of French epistles—exceeding even the number written in Italian. Merchants and officials wrote predominantly in French, whilst intellectuals who knew Franklin more intimately apparently believed he comprehended Italian well enough to read their letters.[39] Franklin's own linguistic abilities are difficult to ascertain, but he certainly read French, Latin and Italian to an impressive standard. He often crafted wordplays in French, though he also struggled with some grammatical aspects.[40] Nevertheless, he relied heavily on official translators and secretaries to draft his diplomatic letters. The one language he never mastered was German: "I do not easily read German," he confessed to his friend Ingenhousz in Vienna.[41] He was even more frank with another correspondent, admitting that he was unable to read a German letter he had received due to "it being in the German Writing which I cannot read."[42] Consequently, all of his responses to

38 Winterer, America, see footnote 1, 609.

39 "Io vi ho scritto in Italiano perché so che lo intendete molto bene." Landriani to Franklin, 9th November 1783. In: Ellen R. Cohn (ed.), PBF. 41, Yale 2014, 187–189.

40 On his wordplay, see Franklin to Abbé Morellet, [after 5th July 1779]. In: Barbara B. Oberg (ed.), PBF. 30, Yale 1993, 50–53. I am grateful to Kate Ohno for pointing me to this example. On his abilities in general, see Franklin, The Autobiography of Benjamin Franklin. New York 1927, 131 and Joseph L. Allaire, Foreign Languages and the Founding Fathers. In: South Atlantic Bulletin 42 (1977), 1, 3–10.

41 Franklin to Ingenhousz, 2nd October 1781[—21 June 1782]. In: Barbara B. Oberg (ed.), PBF. 35, Yale 1999, 554–551.

42 Franklin to Baron Ulrich von Thun, 17th July 1781. In: Oberg, see footnote 41, 274–275.

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Habsburg subjects were either in English or French. The network as a whole was linguistically quite diverse and featured strong regional variations.

This linguistic diversity shows that letter writers employed differing strategies in their correspondence with Franklin. With some assumptions made, we can distinguish between persons who wrote in their mother language and those who strove to reach Franklin in a different, non-native tongue. These assumptions rest on a number of factors: the nominative determinant of the individual cross-referenced with the geographic origin of the respective letter and compared to any other surviving letters by the individual as well as the actual content of their letters, where they frequently mentioned their mother tongue as an asset or as an excuse for their grammatical mistakes in French or English. A few examples will help to elucidate this: the Hungarian-born Anthony Mikoviny, for instance, hid behind his native Hungarian roots to excuse his poor English, which included uncommon phonetic spelling mistakes like "unexperient" for inexperienced and "soldger" for soldier. English was therefore highly unlikely to be his first language. A similar circumstance can be seen in the case of Johann Zinner, who was born in Slaný, Bohemia to German-speaking parents and wrote all of his scholarly works in German or Latin. This makes him an unlikely correspondent to have French as his mother tongue. The same can safely be presumed—though of course not definitively verified—for the Viennese merchant Johann Christian Schuster, who also wrote to Franklin in French.[43] Likewise, we can assume that those who wrote in Latin, like Dr. Jakob Oberleithner and the school director Jakob August Hoppe, were not native-born speakers of that language.[44] In a few cases, however—especially concerning letters from the Austrian Netherlands—this method fails to identify with reasonable certainty the mother tongue of the author. In such cases where it is not reasonably safe to assume the first language of a letter writer, that individual has been left out of the overall count.

With these assumptions in mind, we can estimate that around one in five letters (20%) was written in the respective author's presumed mother tongue—a remarkably small proportion even given the eighteenth-century preference for French. In other words, the vast majority of Franklin's Habsburg correspondents did not write in their native language. In some cases, this was an obvious strategy aimed at eliciting a response from Franklin. The two cavalry officers in Barboz near Mohács are a good example of this: Captain von Gaisberg and Lieutenant

43 'Jean-Claude Zinnern' to Franklin, 26th October 1778, Mss.B.F.85, Series III; 'Jean-Chrétien Schuster' to Franklin, 8th February 1783, in Mss.B.F.85, Series VI. N.B. Both individuals adopted the Francophone version of their names when writing to Franklin in French, a common practice in the eighteenth century.

44 'Jacobus' Oberleithner to Franklin, 9th January 1778, APS, Mss.B.F.85, Series II; Hoppe to Franklin, 19th July 1783, APS, Mss.B.F.85, Series VII.

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Ferdinand von Stahel were almost certainly not native French speakers, but nevertheless managed to write to Franklin in good French so as to secure his help for their enlistment in the American army.[45] They knew that writing in French would result in better chances of securing Franklin's good graces than if they were to write in their (presumptive) native German. After all, French was the international language of choice and therefore one they could reasonably assume Franklin as a diplomat in Paris, or at least someone close to him, to comprehend.

Others employed different linguistic tactics. Some alternated between languages, like the Tuscan merchant Antonio Francesco Salucci, who wrote three letters each in English and French. Linguistic prowess was apparently viewed as a positive attribute that might sway Franklin's opinion of an individual he had never met. In several letters, favour seekers boasted their linguistic skills when detailing their suitability for emigration or service to the United States. The Viennese physician Jakob Oberleithner, for example, employed this strategy when he sent a short offer of service to Franklin, who he imagined would "doubtless be looking for excellent physicians" for the new nation. Oberleithner, who wrote in (somewhat patchy) Latin, asserted proficiency in French and "Slavic Bohemian" as well.[46] Guillaume Sazy did the same when he wrote from Fiume/Rijeka in the hope of obtaining the role of American consul.[47] The radical author and former court secretary (*Hofsekretär*) to Maria Theresa, Franz Rudolf von Großing, professed his love for America, which he wished to serve for suitable remuneration since he claimed a "thorough knowledge" of Latin, Italian, French, German, Hungarian, English, Spanish and "Prussian".[48] The demonstration of language proficiency, these letter writers believed, would lend added grandeur to their standing.

Examining the gender distribution within the network provides additional insights. While women are not entirely absent, it is striking how few of them were part of Franklin's Habsburg network: they accounted for merely 2% of all authors. And although we lack any gendered statistics for Franklin's entire correspondence, this is still a strikingly low percentage when compared to his network in Prussia, which included 13% female authors.[49] Women were

45 Gaisberg and Stahel to Franklin, 29th March 1780, APS, Mss.B.F.85, Series V.

46 Oberleithner to Franklin, 9th January 1778. In: William B. Willcox (ed.), PBF. 25, Yale 1986, 460–461.

47 Sazy to Franklin, 11th February 1783, APS, Mss.B.F.85, Series VII.

48 Grossing (also Grossinger) to Franklin, 10th November 1783, APS, Mss.B.F.85, Series VII.

49 There were three women among the 23 Prussians who wrote to Franklin. See M. E. Douainiére de Platen (née de Krassau) to Franklin, 30th August 1783. In: Ellen R. Cohn (ed.), PBF. 40, Yale 2011, 16–24; Mademoiselle de Kalbe to Franklin, 26th November 1780. In: Oberg, PBF,

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not at all disengaged from the political debates of the day.[50] Moreover, they enthusiastically took up letter writing throughout the eighteenth century.[51] In the Habsburg Monarchy, women held a commanding presence in a cultural institution situated at the nexus of political and private discourse: the salon.[52] The American Revolution fuelled discussions at these salons, and Viennese women like Princess Eleonore Lichtenstein clearly formed their own opinions—in Lichtenstein's case, to the point of arguing strongly against the neutral policy of Joseph II.[53] This circumstance makes the scarcity of female correspondents in Franklin's Habsburg network at a time when their male contemporaries were writing frequently all the more curious.

Out of Franklin's 96 Habsburg correspondents, only two were women: Thérèse Aerts-Smith (née Speeckaert) and Anna Susanna Benyovszky (née Hönsch). Aerts-Smith penned two letters to Franklin, one of which is lost; Franklin's response—which she stated to be "profoundly engraved into my heart"—is likewise missing.[54] Aerts-Smith had cherished the hope of hearing from Franklin since her husband had disappeared on his journey to Boston in 1778. Her preserved letter was written as a final attempt to find her husband, whom she presumed missing or dead in America. In fact, unbeknownst to both correspondents, Francis Joseph Aerts-Smith had not disappeared, but instead assumed the name Dr. Francis Smith upon his arrival in Boston, joined the Continental Army, and effectively abandoned his wife in Brussels by marrying another woman in 1780.[55]

Aerts-Smith's situation was a sad one, but not unique within Franklin's Habsburg network, with Anna Susanna Benyovszky writing for the very same reason on multiple occasions in 1785. She had been born in the town of Szepesszombat (German: Georgenburg)—then located in northern Hungary, but known as Spišská Sobota in Slovakia today—to a German immigrant family in 1750. Her

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see footnote 30, 62–71; Anna Sophia Susanna von Bohlen to Franklin, 26th October 1781. In: Oberg, PBF, see footnote 41, 17.

50 Karen Green, The History of Women's Political Thought in Europe 1700–1800. Cambridge 2015, passim; see also Ulrich L. Lehner (ed.), Women, Enlightenment, and Catholicism. Abingdon 2018.

51 Barbara Becker-Cantarino, Schriftstellerinnen der Romantik: Epoche, Werke, Wirkung. Munich 2000, 162–182.

52 See the contemporary description of the Pergen and Thun salons by Nathaniel Wraxall in his Memoirs of the Courts of Berlin, Dresden, Warsaw and Vienna in the Years 1777–1779. II, Cambridge 2012, 243.

53 Rebecca Gates-Coon, The Charmed Circle: Joseph II and the Five Princesses 1765–1790. Lafayette 2015, 194.

54 "est profondement gravé dans mon Coeur." Aerts to Franklin, s.d. August 1783. In: Cohn, PBF, see footnote 49, 559–561. The date of Franklin's letter is mentioned as 28th August 1782.

55 Cohn, PBF, see footnote 49, 561, n. 8.

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life changed irrevocably in 1768 when she married the swashbuckling Maurice Benyovszky[56], whose failed attempts to support a rebellion against the Russian-installed Polish king would eventually cause him to be exiled to Kamchatka by the Russians. In 1772, having escaped with several other prisoners and taken a circuitous return route to Europe via China, India and the Atlantic, he arrived in France. From there he initiated a daring plan to establish Madagascar as a French colony, but his implausible reports back to Paris along with local resentment ended his fortunes there. In 1779 he joined the American cause against Great Britain and took part in the siege of Savannah, but failed to gain a permanent commission in the Continental Army. Flitting between Europe and North America, Benyovszky appealed to Franklin to support his various schemes five times between 1781 and 1782.[57] On one occasion, he introduced Anna Susanna to Franklin at Passy.[58] The couple travelled to Baltimore, from where Benyovszky launched an expedition to wrest control of Madagascar from the French. Learning of his plan, French forces arrived on the island and thwarted his attempt to seize it. He died in an ambush in May 1786.[59] Writing from Baltimore when all still seemed well in March 1786, Anna Susanna wrote to welcome Franklin upon his return to the United States and update him on her children, who "still remember their uncle at Passy," a title that Franklin felt honoured to be given.[60] As rumours of Maurice Benyovszky's fate began to reach Baltimore and Philadelphia, their correspondence shifted towards that of two friends consoling each other concerning the worst-case scenario. We do not know when Anna Susanna learned of her husband's demise, but she returned to the Habsburg Monarchy shortly thereafter. She holds the distinction of being the only one of Franklin's Habsburg correspondents to write to him from the United States of America.

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56 There are many variants of his name: Count Maurice August Benyovszky (English), Benyovszky Móric (Hungarian), Móric Beňovský (Slovakia), and Maurycy Beniowski (Polish). Benyovszky himself used inconsistent spellings of his own name. The commonly accepted English version is used here.

57 Maurice-Auguste Benyowszky to Franklin, 23rd November 1781; 9th December 1781; 24th December 1781; 13th January 1782. In: Ellen R. Cohn (ed.), PBF. 36, Yale 2001, 103, 227, 291–292, 430. See also Eufrosina Dvoichenko-Markov, Benjamin Franklin and Count M. A. Benyowski. In: Proceedings of the American Philosophical Society 99 (1955), 6, 405–417.

58 The abovementioned letter written on 24th December 1781.

59 For detailed accounts of his life, see Miklós Molnár, Héros ou imposteur? Un aventurier au XVIIIe siècle. In: Revue européenne des sciences sociales 27 (1989), 85, 75–91 and Andrew Drummond, The Intriguing Life and Ignominious Death of Maurice Benyovszky. New York – London 2017.

60 Anna Susanna Benyovszky to Franklin, 8th March 1786, APS, Mss.B.F.85, Series VIII, XLI, 137.

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3. Nodes in the Network

Key individuals within Franklin's Habsburg network functioned as nodes, bringing additional correspondents into the network and connecting Franklin to a wider array of people within the Habsburg Monarchy. Francesco Favi in Paris has already been mentioned as an example for this. However, Favi's connective character pales in comparison to that of the two most important nodes within the network: Dr. Jan Ingenhousz and Professor František Steinsky. Both men came to know Franklin through his scientific career; they were themselves eminent intellectuals within their respective cities Vienna and Prague, which helped them attract other people to the network. In general, Franklin's scientific contacts were clearly the key to establishing and expanding his network.

Steinsky connected Franklin to a larger network in Bohemia through messages conveyed in his letters or by mentioning interested individuals, as demonstrated in the diagram below. Specifically, he connected Franklin to three further scientific figures, namely Ignaz von Born, Vincenzo Martinelli and Balthazar Georges Sage. Steinsky forwarded Born's work to Franklin and engineered the contact to Martinelli.[61] Steinsky also brought Franklin into contact with other individuals, however, which demonstrates how the scientific nodes within the epistolary network could also add non-scientific or political individuals. A certain Captain Stutz, presumably an Austrian army officer of some kind, acted as courier for one of Steinsky's letters to Franklin in 1785—and in return, Steinsky included a note introducing the captain, which he told Franklin gave Stutz "the satisfaction of his desire to know you."[62] A year later, Steinsky forwarded to Franklin a copy of the first published volume by the Bohemian Society of Sciences—compiled by Born—with the compliments of Prince Karl Egon von Fürstenberg, the former governor of Bohemia and first president of the Society.[63] This is an excellent example of how one edge like Steinsky connected other edges into the network both intentionally (Fürstenburg) and unknowingly (Born). Other persons brought in by Steinsky are not included

61 Steinsky to Franklin, 3rd August 1783. In: Cohn, PBF, see footnote 49, 429–433.

62 Steinsky to Franklin, 24th April 1785, APS, Mss.B.F.85, Series VIII.

63 The "Abhandlungen der Böhmischen Gesellschaft der Wissenschaften" were launched in 1775 by Born in an informal setting in ca. 1771, expanded between 1775 and 1784 as the Böhmische Gelehrte Privatgesellschaft, and refounded in 1784 by Josef Dobrovsky as the Böhmische Gesellschaft der Wissenschaften. There is as yet no sufficient biographical study on Prince Karl Egon von Fürstenberg, see Claire Mádl, L'aristocrate client, complice, et concurrent des libraires. In: Johannes Frimmel / Michael Wögerbauer (eds.), Kommunikation und Information im 18. Jahrhundert: Das Beispiel der Habsburgermonarchie. Wiesbaden 2009, 175–176.

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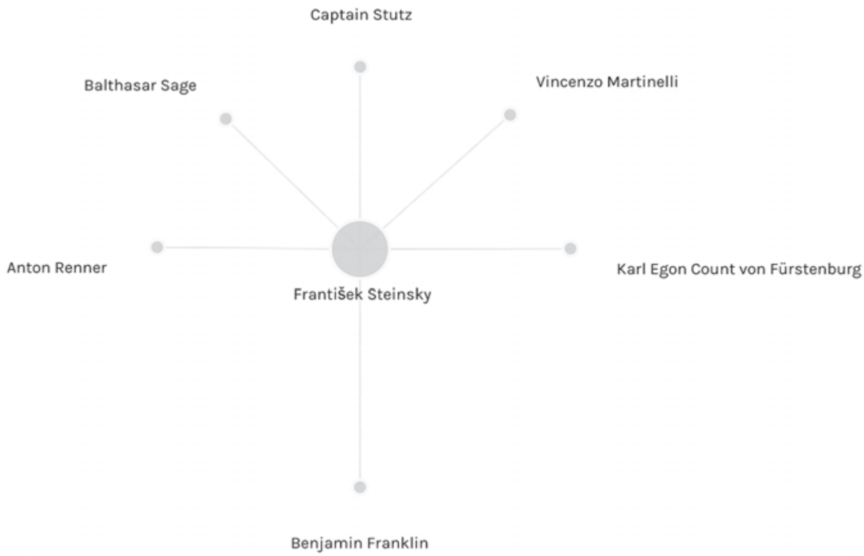


Fig. 2 Ego diagram of Steinsky's node in Franklin's Habsburg network.

here, such as a bookseller in Dresden who communicated his admiration of Franklin through Steinsky.

Officials also performed this function, though their efforts were overtly political from the outset. Favi's example has already been discussed, and the Habsburg ambassador to France, Count Florimund Mercy-d'Argenteau, connected Franklin to further significant edges through his correspondence. In one letter, he arranged passports and meetings between Franklin and Baron de Beelen-Bertholff, the new Habsburg commercial representative in the United States, as well as Professor Franz Joseph Märter, who led the emperor's scientific expedition to North America between 1783 and 1787.[64] Mercy-d'Argenteau also relayed messages on behalf of senior officials like Prince George Adam von Starhemberg, the minister plenipotentiary of the Austrian Netherlands.

The importance of these nodes becomes clear when we consider how they affected aspects like international diplomacy. In the period after the American War of Independence, Habsburg policy shifted dramatically from neutrality and non-recognition of the United States during the war to openness and willingness to establish diplomatic relations with the new sovereign nation. A major stumbling block for this new Habsburg policy were the requirements of diplomatic etiquette: a Habsburg minister could not be seen initiating contact with the Americans, let alone propose any commercial connection, when diplomatically

64 Mercy-d'Argenteau to Franklin, 15th April 1783. In: Cohn, PBF, see footnote 28, 474–475.

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speaking the Habsburg Monarchy was the more prestigious power. According to diplomatic custom, the Habsburgs could not be seen interacting with a lesser power—especially with formerly rebellious colonists. No matter how badly they desired trade with America, the Americans would have to be nudged into taking the first step. This proved an even greater obstacle, since the lack of diplomatic recognition of the United States meant that normal diplomatic channels were unavailable.

When the issue came to a head in the spring of 1783, Mercy-d'Argenteau found himself incapable of making an implicit overture to Franklin. Utilising Franklin's network was a possible solution, however. Imperial ministers were well aware of Ingenhousz's long-standing connection to Franklin, and they now sought to employ it for their political ends. In April, Ingenhousz wrote a lengthy letter to Franklin explaining the court's desire for a commercial treaty and reminding him that one of the courtiers had written to Franklin unofficially regarding the matter. The man in question was Joseph Paul von Weinbrenner, a wealthy Viennese merchant who acted as commercial advisor to the emperor. Without a proper introduction to Franklin, however, Weinbrenner had assumed his letter would fall on deaf ears. Keen to not disappoint the emperor, and at the suggestion of State Chancellor (Staatskanzler) Prince Wenzel Anton von Kaunitz, Weinbrenner hoped to use Ingenhousz's connection to elicit a response from Franklin. It was for this reason that Ingenhousz wrote to Franklin immediately when "that gentleman [Weinbrenner] came to beg of me [sic] to write to you about it" and handed him a copy of the earlier letter. On behalf of Weinbrenner, Kaunitz and the emperor, Ingenhousz informed Franklin that "the emperor is ready to acknowledge the United States as a sovereign and independent power as soon as you or any one authorised makes any steps towards that purpose."[65] Franklin duly responded in his next letter to Vienna.

Ingenhousz served as a functional node in Vienna, and the court recognised it. This utilisation of the network demonstrates the effectiveness it offered beyond the official channels of diplomacy. Franklin's personal connections within the Habsburg Monarchy could effectively help to bring the two nations together. When Franklin returned to the United States in 1785 and Thomas Jefferson took over his role in Paris, the network all but collapsed, precluding easy unofficial access to an American representative. The situation deteriorated abruptly when Jefferson and Mercy-d'Argenteau reached a bitter personal impasse that—without Franklin's network and Ingenhousz's hotline to him—all but doomed U.S.-Habsburg relations in the 1780s. As a consequence, no treaty was signed between the two states until the 1820s.

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65 Ingenhousz to Franklin, 8th April 1783. In: Cohn, PBF, see footnote 28, 444–446; Weinbrenner to Franklin, 19th February 1783. In: ibid., 118–119.

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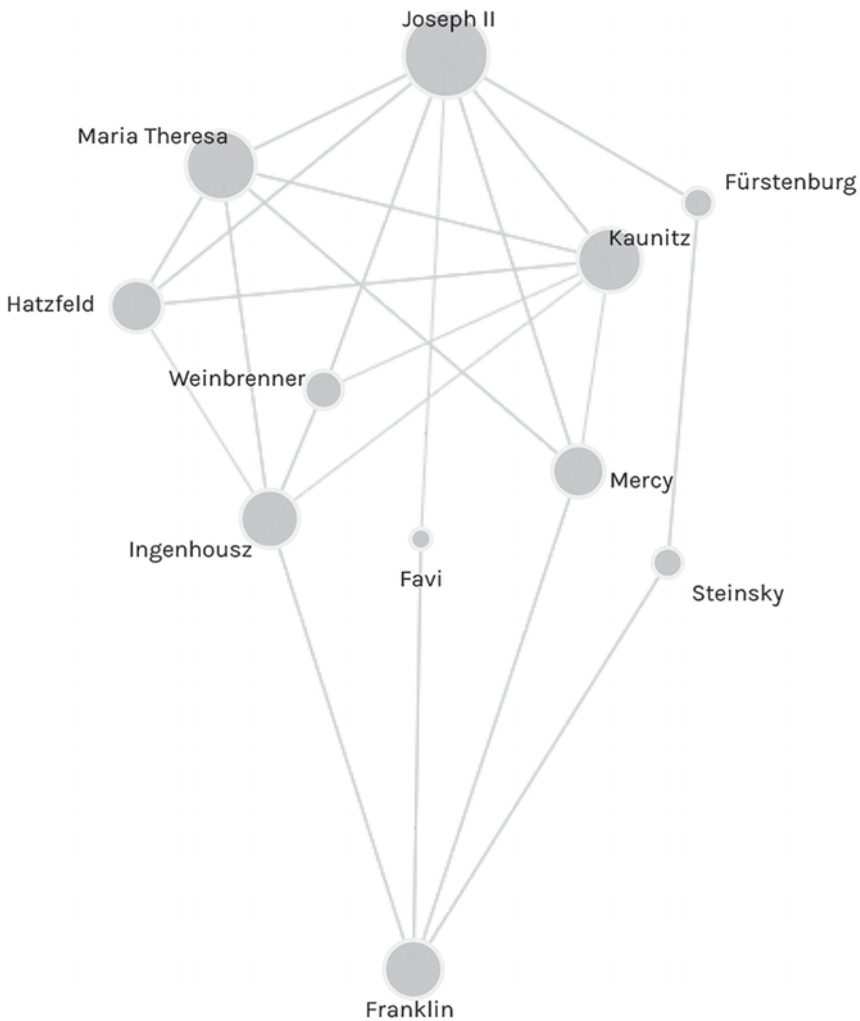


Fig. 3 Pathways between Joseph II and Benjamin Franklin.

Ingenhousz was undoubtedly an important node within the network, but his actual value for the imperial court in this regard is easily overstated. The visualisation above emphasises this by showing the multiple network paths Joseph II and Franklin shared. Although a robust link, Ingenhousz was merely one connection to Franklin out of multiple possibilities. This meant the emperor was not dependent on him to maintain contact with Franklin, especially after the Americans had made an initial move in the summer of 1783. The political

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distortion of the network, however, reminds us once more of the evolving nature of Franklin's Habsburg contacts. Before 1776, Ingenhousz was one of only a handful of persons in contact with Franklin, and the nature of Franklin's Habsburg network at the time was entirely scientific. Even Count Ludwig Belgiojoso, the Habsburg ambassador in London, contacted Franklin only in regard to scientific matters rather than political ones.[66] Ingenhousz's role best demonstrates the transition of the network from a scientific one to an overtly politicised one—which in turn reinforces the points made earlier regarding Franklin's shift from scientific mind to revolutionary embodiment and go-to for those interested in the American Revolution.

4. Conclusion

There is no doubt that Benjamin Franklin occupied a central position for Habsburg subjects who engaged in some way or other with the American Revolution. His earlier scientific celebrity had left a lasting impression in Central Europe, but his revolutionary character, first emblazoned in the minds of Habsburg subjects during the 'Cockpit Trial' of 1774, would soon become his overriding persona in their eyes. His presence in Paris for the majority of the American Revolutionary War further cemented the notion of Franklin as the quintessential revolutionary leader. As one Hungarian-born author put it to him after the conclusion of the war, "America owes its freedom to you."[67]

For Habsburg subjects, his residency in Paris also brought about a sense that Franklin was within their reach. As a tangible artefact of the distant revolution unfolding across the Atlantic, Franklin became the lightning rod for a diverse group of individuals from all over the Habsburg lands. As a result, ninety-six people felt compelled to contact him during the course of the American Revolution. Historian Jonathan Sperber has commented on how the two hundred Germans who wrote letters to Franklin are "a remarkable occurrence, evidence of the impact of the American Revolution beyond the usual suspects."[68] These two hundred Germans probably do not include all of the ninety-six letter writers from the Habsburg Monarchy who evidence an greater appreciation for the widespread appeal of Franklin and the Revolution he represented. Through the prism of Franklin and his network in Central Europe, we can see just how far the "shot heard round the world" echoed beyond the 'usual suspects.'

66 Belgiojoso to Franklin, 30th September 1772. In: William B. Willcox (ed.), PBF 19. Yale 1975, 305.

67 Franz Rudolf von Grossing to Franklin, 10th November 1783, APS, Mss.B.F.85, Series VII.

68 Jonathan Sperber, The Atlantic Revolutions in the German Lands 1776–1849. In: Helmut Walser Smith (ed.), The Oxford Handbook of Modern German History. Oxford 2011, 147.

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Finally, through visualisation we can also appreciate the structure of Franklin's Habsburg network. Major concentrations in Vienna or the towns and cities of the Austrian Netherlands become more immediately apparent, and the connective power of Ingenhousz and Steinsky becomes more discernible when their positions within the network are highlighted than it would when reading their correspondence with Franklin in isolation. This enhancement also illustrates the multiple pathways between Franklin and the Habsburg ruler Joseph II, indicating once more the relatively astonishing ties between the Habsburg Monarchy and the United States of America. With further mapping of Franklin's epistolary networks, we will be able to better contextualise this connection in the future. For now, this part of Franklin's European network enables us to understand more clearly—and in unlikely ways—an extraordinary man within his extraordinary times.

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Short Papers and Project Presentations

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Stefan Ehrenpreis

Big Data and the History of Early Modern Individuals

The Case of VOC Employees from the Habsburg Territories

1. Introduction

In 1953, French historian Pierre Chaunu launched a research project that evaluated early modern serial sources on a large scale with the help of computer technology available at the time. He examined the Spanish shipping registers from the "Casa de la Contratacion" in Seville, which document journeys between the motherland and the viceroy kingdoms in the Americas for a large share of Spanish trade traffic in the 16th to 18th centuries.[1]

Similarly large amounts of data can be found in the tradition of church records used by historical demography and related socio-historical approaches. As well as being useful for family reconstruction purposes, analysis of these parish registers can also answers questions regarding the development of village communities through marriages, 'swindling up', sponsorships and so on. Besides France, this form of quantitative analysis was intensively pursued in England, where the "Cambridge Study Group" involving Lawrence Stone among others most notably used such serial sources in the 1970s for the production of mass data that could be statistically evaluated using data processing equipment. In this way, studies on marriage patterns or literacy in the early modern period could be carried out.[2]

This peak phase of quantitative analysis—as commonly employed, for example, in the second generation of the "Annales" school—ended in the 1980s and led to the "revival of the narratives" in European historiography.[3] It is only now, with the digital revolution, the increasing presence of science on the Internet and successful examples of Internet-based analysis, that a new trend towards "big data" is emerging in historical research.

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1 Huguette Chaunu / Pierre Chaunu / Guy Arbellot, Séville et l'Atlantique: 1504 – 1650. 8 vols., Paris 1955–1959.

2 Edward Anthony Wrigley, Small-Scale but not Parochial. The Work of the Cambridge Group for the History of Population and Social Structure. In: Family and Community History 1 (1998), 27–36.

3 Lawrence Stone, The Revival of Narrative: Reflections on a New Old History. In: Past & Present, no. 85 (Nov. 1979), 3–24.

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2. Current Forms of Research

In current research on early modern history topics in Germany and Austria, there are still only few projects that work with mass data. On the one hand, it is difficult to collect such amounts of information, and early modern sources rarely provide comparable data. On the other hand, the collection and processing of these sources is extremely labour-intensive and only possible under long-term, consistent working conditions that are rarely available due to the short-term nature of research funding.

A joint project by two Swiss universities at Berne and Zurich may serve as a model in terms of creating its own research presentation on the Internet. It is based on the first survey on the situation of schools in the German-speaking areas of the Swiss Confederation as organized by Minister of Education Stapfer in 1799 during the Helvetic period. The aim of this survey was to lay the foundations for a comprehensive school reform, and the questions answered by the teachers of the schools concerned the organization, financing, construction, student bodies, teachers, textbooks etc. of all schools. The recent research project financed by the Swiss National Science Foundation edited the response forms preserved in the cantonal archives, combined them with a historical map of the Swiss Confederation and presented them on the Internet as a multimedia database.[4] The evaluation of the questionnaires with regard to school sponsorship, attendance, teaching methods, teachers and textbooks is the subject of accompanying dissertations linking the data from the school survey to other archive materials from the transmission of school files or data on the contemporary book market.

A second project consolidating archival data and making them accessible on the Internet is the database of trial files of the Imperial Chamber Court (Reichskammergericht). In the 1980s, at the initiative of legal historian Bernhard Diestelkamp and with funding from the German Research Foundation, a combined database of the trial files of this high court of the Holy Roman Empire established in 1495, which were distributed among several German state archives since 1806, was created. The Imperial Chamber Court, which shared the highest level of jurisdiction with the Imperial Aulic Council (Reichshofrat) in Vienna, dealt with several tens of thousands of lawsuits—for each of which the names of the parties, the subject matter of the dispute, the procedural form and the duration of the proceedings were filed. A research project at the University of Würzburg together with the Research Centre for the

4 See the description and data at https://www.stapfer.ch, accessed 21.12.2018. This project was headed by Daniel Tröhler, André Holenstein and Fritz Osterwalder and took place at the University of Berne.

Imperial Chamber Court (at the former court's seat in Wetzlar) created digital inventories from the printed directories of the trial documents, which allowed search functions as well as a quantitative evaluation of the court's work.[5]

Both recent projects concentrated on the exploration of sources, thereby offering points of contact for various questions and sub-disciplines of historical science. They created their own databases and provided links via search functions. The possibilities for such linkage are manifold, however, and cannot be comprehensively implemented by any individual research team. One objective that has long been pursued by research into early modern history is the investigation of personal networks and collective biographies. So far, the usual biographical reference works, contemporary compilations and special research have been used for this purpose.[6] In the wake of new methodological trends like the centring of actors, biographical factors as well as family or network connections are becoming more and more important, and the use of databases with biographical or prosopographical information is therefore a necessity. In the following, an Innsbruck project funded by the Tyrolian Science Fund will be presented.

3. The Dutch United East India Company (VOC) as an Object of Research

In European historiography of early modern colonial history, there has been an increasing focus of attention on trading companies for some years now. Similar to the Spanish state colonial administration, these trading companies have left behind extensive archive material. The analysis of these sources has made considerable progress owing to a heightened interest in global history, for example in the Netherlands through a research centre at the University of Leiden.[7] The study of the world of trading companies focuses less on the political aspect of domination than on the economic relations between European merchants and the indigenous societies of Asia as well as on forms of cultural contact and mutual perceptions. With these research interests in mind, the

5 See https://www.jura.uni-wuerzburg.de/lehrstuehle/amend-traut/forschungsprojektdatenbankhoechstgerichtsbarkeit/datenbank, accessed 10.01.2019.

6 One only has to think of the example of the prosopographical study by Sigrid Jahns, Das Reichskammergericht und seine Richter: Verfassung und Sozialstruktur eines höchsten Gerichts im Alten Reich. 3 vols., Cologne 2003–2011, which was arranged without the help of the Internet in the 1990s.

7 In cooperation with the national archives of the successor states that formerly had VOC branches, a virtual consolidation of the archival sources was achieved and a training centre for European and Asian archivists and historians was founded at the same time, see http://www.tanap.nl, accessed 10.01.2019.

European participants in these trading companies—who were not necessarily citizens of the colonizing states and mostly employed in simple professions as sailors, soldiers or craftsmen—have also come under closer scrutiny. The "colonial experience" of early modern Europe was shaped not only by the structures of power and exploitation, but also by the everyday lives of many ordinary Europeans in the non-European world.

Probably the most important example for the world of this trade colonialism is the Dutch "Vereenigte Oostindische Compagnie" (VOC). In 1602, Dutch merchants and investors who had previously made individual trade trips to Asia joined up under pressure from the States General of the Dutch Republic to form the VOC with the purpose of coordinating and monopolizing their trade in the Indian Ocean region.[8] Privileged by the government, the company had its headquarters in Amsterdam (the "East India House", used by the University of Amsterdam today) and chose Batavia (now the Indonesian capital of Jakarta) as its main base and seat of the governor general in Asia. In the years after 1602—by way of taking over Portuguese possessions in the Indonesian archipelago and other conquests—the company succeeded in establishing itself as a limited colonial territorial power, but as a leading player in trade in the Indian Ocean. The trade volume of the VOC grew rapidly starting in the middle of the 17th century, and from about 1680 to 1750 it was at the peak of its economic success: Apart from the main bases on the Indonesian archipelago and Ceylon, it operated numerous branches in India, Thailand, Malaysia and China and, as the only European power, had the right to a trading station in Japan (the artificial island Deshima near Nagasaki). In addition, it had a maritime supply station at the Cape of Good Hope.[9]

The economically extremely successful VOC covered its enormous need for personnel (seamen, soldiers, merchants, craftsmen, technical experts) primarily with men from areas in Northern and Central Europe, since the Dutch labour market, which was characterized by high qualifications and high wages, could not meet the huge demand for simple and low-paid work. The VOC ships transported more men from Europe to Asia than all other European states and trading companies combined before 1800.[10] Most of the forty to fifty thousand

8 Femme Gastra, The Dutch East India Company. Expansion and Decline. Zutphen 2003.

9 A map of the VOC trading centres can be found in Roelof van Gelder, Das ostindische Abenteuer. Deutsche in Diensten der Vereinigten Ostindischen Kompanie der Niederlande (VOC) 1600–1800. Bremerhaven 2004, 30.

10 Jan Lucassen, A Multinational and its Labor Force: The Dutch East India Company, 1595–1799. In: International Labor and Working-Class History No. 66 (2004), 13. A regional case study is Frank Lequin, Het personeel van de Verenigde Oost-Lndische Compagnie in Azie in de 18e eeuw. Meer in het bijzonder in de vestiging Bengalen. Alphen aan den Rijn 2005.

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men each year worked as free labourers (total approx. one million), with up to a third being unfree Asian or African workers or slaves.[11] Only a third of all labourers returned to Europe: Many died of diseases, some in military engagements, and some decided to stay in Asia, marrying indigenous women and having children with them.[12] The main motive for joining the VOC were the wages: Even seamen or soldiers of the lowest ranks earned a minimum of 108 guilders per year in 1650, a sum comparable to the annual salary of a teacher in a Central European grammar school).[13] Well-trained craftsmen and other professionals like ship navigators and men with military training received extraordinary provisions and were supported in pursuing a career within the company. There were even two German governors general during the eighteenth century.[14] Expectations of becoming rich were common as rumours of wealthy lands in the East abounded. Some adventurers were probably also fascinated by the exotic aspects of living abroad, far from the feudal society in their home countries.[15]

According to recent studies, a number of up to 500,000 people from the Holy Roman Empire are estimated to have served in the VOC until it was dissolved in 1799—representing a labour migration from Europe of an extent unknown in any other context.[16] A large part of these German-speaking employees of the VOC came from the north and west of the Empire, but other regions as well as France and Switzerland were also represented, since knowledge of the recruitment efforts and the opportunities offered by the service in distant countries reached beyond the Alps. There was also no denominational restriction to members of the Reformed Church, which was privileged and predominant in the Dutch Republic, so that numerous Lutherans and Catholics were among the VOC employees.[17]

In addition to the large groups of sailors, soldiers and craftsmen employed in the VOC, a position in the United East India Company was also attractive for sought-after professionals from Central Europe. The company was particularly interested in specialists from the mining and metalworking sectors who could help exploit colonial raw material resources, especially silver and other rare metals. It can therefore be assumed that there was also labour migration from the mining regions of Saxony and present-day Austria within the framework of the VOC. Employment in the United East India Company was usually limited to

11 Lucassen, Multinational, see footnote 10, 15.
12 Ibid., 16–17.
13 Ibid., 17.
14 Ibid., 28.
15 Van Gelder, Abenteuer, see footnote 9, 95–97.
16 Ibid., 42f.; Lucassen Multinational, see footnote 10, 18.
17 Van Gelder, Abenteuer, see footnote 9, 55.

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several years by contract, so that the decision to enter into its services included (at least the option of) eventual return to one's home country.

Apart from studies on travel reports published by individuals from this group of VOC employees after their return, there has so far been little research on the tradition of early modern labour migration from German-speaking countries to Asia.[18] An excellent quantifiable source is available for the investigation of United East India Company workers, however: the VOC shipping register maintained from 1637 onwards. This register lists all persons who boarded a VOC ship in the Netherlands and had signed a contract of employment, i.e. it provides a personnel ledger of sorts for those who travelled to non-European branches. This personnel ledger was published in digital form by the Dutch National Archives a few years ago.[19] The staff of the administrative centre at the East India House in Amsterdam is not included in the register, but it was relatively small, with only about 1000 members who were mostly from the Netherlands. The database contains information on approximately 770,000 VOC employees between 1637 and 1794, including the local origin of each person, which offers a starting point for regional analysis. Further personal data sets provide information on the times of employment in the VOC as well as on departures, on the names of vessels on outward and return voyages, on the activities performed, and on advance payments. The database is probably one of the largest in the field of early modern history and the most comprehensive featuring mass data without a text corpus. The data for all individual categories mentioned above can be searched and combined for queries.[20]

The data on the regional origins of the VOC employees allow the respective share in the labour migration from different regions in Northern, Western and Central Europe to be determined. Numerous questions of interest for early modern history follow from this: What were the reasons for joining the VOC? Were there any regional or occupational focal points of recruitment? Finally, the return and reintegration of these men into the European corporative societies raises questions about how they experienced their participation in Western European colonial expansion. In research literature, the Holy Roman Empire is regarded as the one European political entity that did not participate in Eu-

18 These travelogues are the basis of the study by Van Gelder, Abenteuer, footnote 9. The only other publication to mention is Mareike Menne, Elendes Volk, vor Batavia ertrunken – Nordwestdeutsche als Angestellte der niederländischen Ostindienkompanie. In: Paderborner Historische Mitteilungen 27 (2014), 102–124.

19 http://vocopvarenden.nationaalarchief.nl, accessed 28.11.2018.

20 For search queries, it is better to use another website of the Dutch National Archives at http://www.gahetna.nl/collectie/index/nt00344/q/zoekterm/voc/q/comments/1, accessed 12.01.2019.

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ropean expansion.[21] This makes it particularly interesting to look at the social and economic consequences of overseas labour migration. The early modern population of the Empire must have had knowledge of non-European regions and non-European cultures and ways of life obtained from personal experience. How this experience affected the firmly established European society of Estates and whether it promoted the discussion of alternative political and social concepts among the population in the regions of return has hitherto not been researched—in contrast to the investigation of scholarly texts on the relationship between European traditions and mentalities and the perception of Asia, America and Africa. A combination of collective and individual biographical methodology will be required to answer these questions. Social, regional and other group affiliations of VOC employees can be collected from the mass data. Their respective experiences, perceptions and cultural contacts, however, can only be investigated using individual biographies, for example ego-documents and reports on life after return.[22] Only in a few cases has correspondence from VOC employees with their home country during their service been found. These letters indicate, however, that there were local personnel networks that helped with entry into the VOC and accompanied the new employees' preparations.[23] The studies available so far usually focus on individuals who—during their travels or after their return—penned extensive descriptions of their journeys, activities and experiences and published them.[24] Only in a few cases was an attempt made to compare multiple VOC employees.[25]

21 Hans-Ulrich Wehler, Deutsche Gesellschaftsgeschichte. Vol. 1, Munich 1988, 34–41.

22 See for example Willem Frijhof / Wegen van Evert Willemsz, Een Hollands weeskind op zoek naar zichzelf, 1607–1647. Amsterdam 1995.

23 Stefan Ehrenpreis, Scribal Networks: Germans in the Dutch Colonial Empire and their Communication. In: Deshima 3 (2009), 91–103.

24 See for example Victor Eindhoven / Steve Murdoch (eds.), The Navigator: The Log of John Anderson, VOC Pilot-Major, 1640–1643. Leiden 2010; Leonard Blussé / Jaap de Moor, Een Zwitsers leven in de tropen. De lotgevallen van Kapitein Elie Ripon in dienst van de VOV (1618–1626). Amsterdam 2016. A French example is Gordon Sayre / Carla Zecher (eds.), The Memoir of Lieutenant Dumont, 1715–1747: A Sojourner in the French Atlantic. Chapel Hill 2012.

25 Vibeke Roeper / Roelof van Gelder, In dienst van de Compagnie. Leven bij de VOC in honderd getuigenissen (1602–1799). Amsterdam 2002; Jan Beers / Cees Bakker, Westfriezen naar de Oost. De kamers der VOC te Hoorn en Enkhuizen en hun recruteringsgebied, 1700–1800. Hoorn 1990.

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4. The Innsbruck Project

The aim of the Innsbruck research project is to use the database of shipping registers for an investigation of the regions of origin in the area of present-day Austria. The VOC's service in Habsburg-Austrian regions has so far only been described in detail for one individual on the basis of a travel report, namely the later imperial army officer Christoph Carl Fernberger von Eggenberg from Vienna.[26] The small number of travel reports found thus far makes it impossible to determine the extent and effects of long-distance migration from the Habsburg territories to the Indian Ocean. The evaluation of the shipping register database is therefore not only relevant to regional historical research, but can also represent a new general contribution to research into the share of Central Europe's early modern regions in European expansion.

The database of VOC shipping registers is a serial source that entails various intrinsic difficulties. These difficulties arise in the analysis of the data themselves as well as when linking them to other sources. In keeping with early modern historical research practice, the data on the employees' origins were neither standardized nor transformed into modern-day place names by the Dutch National Archives. Therefore, multiple different spellings of place names as well as non-specific designations of origin appear (e.g. about a dozen different spellings for "Innsbruck" along with several for Tyrol: "Tyrolia", "tyrolensis", "Tirolisch", "Diroler" etc.). Their evaluation therefore requires not only excellent geographical knowledge but attention to Dutch-influenced designations as well.

Once the personal data have been collected, the obtained records can be grouped according to temporal and local-geographical distribution. They then provide the basis for a further search for sources on family-related, social and economic contexts of labour migration. The first question is the motivation: Were the VOC employees predominantly non-firstborn sons who were not entitled to inherit and therefore looking for an opportunity for economic improvement? Did several people leave certain places at once, following each other or going in groups? Did local networks exist to inform former neighbours about life in the East Indies?

Answering these questions becomes possible by linking personal data with information from church records. Generally speaking, however, no region of the Holy Roman Empire has yet been recorded digitally in full-text. The Tyrolean church records, for example, can be viewed digitally—but only as scans of the originals.[27] The search therefore has to start with the identification of

26 Karl R. Wernhart, Christoph Carl Fernberger. Der erste österreichische Weltreisende 1621–1628. Münster ^{2}2011. For the most part, this monograph is a reprint of Fernberger's travel report, which survived as a manuscript in the Harrach family archive in Vienna.

27 See http://apps.tirol.gv.at/bildarchiv, accessed 30.01.2019.

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the persons' hometowns—which are only mentioned for 36 of the 129 VOC employees from Tyrol who have been recorded so far, however. For the remainder, the designation of origin is simply the Tyrol region.[28] Occasionally, the listing of Tyrolean surnames may help to suggest a local affiliation.[29] There are further problems with the identification of persons even when there is a clear designation of origin, however: In larger towns, there were several parishes and therefore several church records to be searched. Once the correct family has been found, the year of birth (which is not mentioned in the shipping register) must be estimated. Since a minimum age of 17 years was required and an age above 40 at entry can hardly be assumed, the possible years of birth can be narrowed down.[30] Nevertheless, there is still much room for error and need for searching. What is more, first names were often given several times within a family, making it difficult to identify persons unambiguously. The easiest cases of individual identification are usually those of nobles, whose family tradition tends to be richer. It is also easier to search for regions for which a printed evaluation of family data is available, such as the former "Reichshof" Lustenau in Vorarlberg.[31] A further possibility of retrieving information concerns those men who returned from overseas: Can further records on them be found, for example on an eventual marriage? Ideally, the prestige or possessions of the returnee could be inferred from a marriage into a socially superior family.[32] In individual cases, further official sources can also be taken into account, in particular tax and court files. For the search for the six VOC employees from Hall in Tyrol, for example, the "Verfachbücher" (reference books) of the Hall municipal court, which are preserved for 1670 and onwards, have proven a useful reference.[33]

Overall, it can be said with regard to Tyrol that attempting to link the VOC database to other personal data entails problems, since no full-text databases are available. Family-related data must be extracted in a time-consuming process from the church records available online or in sometimes badly organized (as far as prosopographical sources are concerned) archives.

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28 Thomas Bunte / Stefan Ehrenpreis / Benjamin van der Linde, Tiroler in der niederländischen Vereinigten Ostindien-Kompanie (VOC) (ca. 1680–1795). In: Tiroler Heimat 80 (2016), 115.

29 See https://www.tirol.gv.at/kunst-kultur/landesarchiv/forschungstipps/familiennamen, accessed 12.01.2019.

30 Bunte / Ehrenpreis / van der Linde, Tiroler, see footnote 28, 116.

31 See the digital full-text version at http://apps.vorarlberg.at/archiv/vla/lustenau/portal.html, accessed 10.01.2019.

32 Our work on these names and the church registers is not yet complete.

33 Archival source: Tiroler Landesarchiv Innsbruck, Bestand Stadtgericht Hall.

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Due to the difficult search for materials in Tyrol, an extension to other regions for which better sources for the early modern history of individuals exist is conceivable. As is the case for many early modern cities, this also applies to Vienna. The Vienna City and State Archives (Wiener Stadt- und Landesarchiv) have a large and prosopographically analysable collection.[34] The most important group of sources are the testamentary and inheritance files (Testamente und Verlassenschaften).[35] They not only provide data on the deceased person, but also on his or her estate and heirs. If persons having returned from VOC service could be found here, conclusions could be drawn about their possessions and lives following their return. The records on the deceased generated since 1648 could likewise be consulted. In addition to the death certificate (Totenbeschauprotokolle), they also provide information on the respective individual's profession.[36]

Vienna seems an attractive research area in this context, since at least eleven nobles can be found among the more than 400 entries in the VOC database under the keyword "Wenen" or "Weenen" who were given the military officer rank of "Adelborst" (midshipman).[37] For this group of persons, additional information might be found in family archives, the tradition of the court or court files. Here too, however, the data from the database would first have to be correlated to archive records that have not yet been digitized.

5. Summary

Since the 1950s, historical research has begun to prepare large amounts of data for quantitative analysis and statistical evaluation with the aid of machine data processing equipment. The databases of the early days were obtained from serially transmitted sources. Only with the progress in word processing over the past 20 years has it become possible to make texts stored in digital form evaluable on a massive scale, e.g. with regard to the history of political or social languages and terminology and their development. This text-based use promises to provide information about the production and distribution of

34 See the overview of the archive holdings at https://www.wien.gv.at/kultur/archiv/bestand/index.html, accessed 22.02.2019. On the possibilities of family research in Vienna, see Susanne Claudia Pils / Hannes Tauber, Der Apfel fällt nicht weit vom Stamm? Familienforschung im Wiener Stadt- und Landesarchiv (Wiener Geschichtsblätter Beiheft 1/2017). Vienna 2017.

35 Wiener Stadt- und Landesarchiv, no. 1.2.3.1 A1 and A2 (with indices B1 and B2).

36 Wiener Stadt- und Landesarchiv, no. 1.1.10 and no. 3.7.1.6 K2 (only nobles). See Roman Uhl, Die Totenprotokolle der Stadt Wien. In: Die Sippe 1 (1938), 53–56.

37 See van Gelder, Abenteuer, see footnote 9, 144–145.

historical prints and is also valuable for the history of concepts and historical semantics.[38]

Looking at current social history research in a global dimension, e.g. in regard to migration, it is also important to rearrange the use of serial sources by establishing databases of mass data on individuals, families or other social groups like professionals. The case of the VOC shipping registers makes clear how useful a higher rate of digitization of prosopographical sources can be. We cannot expect large numbers of such records to become available in digital form within the next years, but mass data should not be forgotten in the current trends of Digital History.

38 On methodological problems, see Ernst Müller / Falko Schmieder, Begriffsgeschichte und historische Semantik. Ein kritisches Kompendium. Berlin 2016.

Doris Gruber, Elisabeth Lobenwein, Arno Strohmeyer

Travelogues

Perceptions of the Other 1500–1876. A Computerized Analysis

This essay introduces an interdisciplinary and international digital humanities project. The project team is developing tools for the semi-automatic search for and evaluation of digitally available texts with the goal of analysing perceptions of 'otherness' and 'Orient' (Ottoman and Persian Empires) in a large text corpus of travelogues kept in the collections of the Austrian National Library and covering the period from 1500 to 1876. The project is funded by the Austrian Science Fund (FWF: I 3795-G28) and the German Research Foundation (DFG: 398697847). It began in April 2018 and will last for three years, with several institutions collaborating: the Institute for Modern and Contemporary Historical Research at the Austrian Academy of Sciences (INZ/ÖAW), the Austrian Institute of Technology (AIT), the Austrian National Library (ÖNB) and the research centre L3S at the University of Hannover.

Thematically and methodologically, the project explores new possibilities offered by the continuous digitization efforts in the cultural heritage domain. Travelogues have long been a popular subject of cultural history research, and interest in the topic has grown even further over the past decade: A veritable flood of publications appears every year in German-, English-, Spanish- and French-speaking countries alone.[1] This is no coincidence, since travelogues offer a wide range of information on topics closely connected to modern-day challenges like mass tourism, transnational migration, interculturality and globalization. By definition, they also contain perceptions of "otherness" related to foreign regions, cultures and religions. The socio-cultural background and self-representations of the people involved in the production of such travelogues, however, strongly shaped what they perceived as foreign or 'other' and how they described it. Through comparative analysis, this influence in turn allows us to scrutinize how (specific) origin cultures dealt with 'otherness'. In addition, large-scale examinations offer insights into the formation and evolution of stereotypes and prejudices.

1 For a far-reaching, yet incomplete bibliography, see: Carlo Salzani / Steven Tötösy de Zepetnek, Bibliography for Work in Travel Studies. In: Library Series, CLCWeb: Comparative Literature and Culture (version 14.09.2016), https://docs.lib.purdue.edu/clcweblibrary/travelstudiesbibliography, last accessed 12.04.2018.

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Until recently, such tasks were all but impossible to perform for individuals or small groups of researchers; limited by their natural capacities, they therefore often focused on individual or specific sets of travelogues. Although heuristic approaches have proved to be fruitful,[2] large-scale analysis to explore and compare results on a quantitative level has remained a desideratum.

The project responds to this desideratum with a novel mixed-method approach to quantitative and qualitative analysis of travelogues. Researchers and scientists from the fields of history and computer science as well as library science and information science are jointly developing algorithms for semi-automatic identification and evaluation of travelogues. State-of-the-art machine learning, text mining and adaptive topic modelling techniques are being applied and novel neural-network-based approaches are being created to handle the data. In order to develop these tools, the project team is focusing on a specific set of travelogues that are (a) printed, (b) appeared originally in German, (c) were published in the period between 1500 and 1876, and (d) can be found in the collections of the Austrian National Library.[3]

Based on this data set, the project has four main goals that are interconnect and in part build upon each other:

1. *Semi-automatic creation of a text corpus*. Identification of characteristic elements of travelogues and mapping of possibilities for collecting them automatically. The preliminary results reflect an exponential rise in the production of travelogues during the 18th and 19th centuries. The corpus already includes over 3,000 travelogues, of which only about 250 originate from the 16th and 17th centuries.
2. *Amelioration of the OCR output*. Application of a state-of-the-art recurrent neural network (RNN) will make the OCR output more accurate, ensuring better results for all text analysis. The key challenge is the varying quality of the OCR in diachronic and synchronic terms.
3. *Collection of metadata*. Creation of an open access database containing the identified travelogues as well as further information on the materiality

2 See for example Bekim Agai / Stephan Conermann (eds.), "Wenn einer eine Reise tut, hat er was zu erzählen": Präfiguration – Konfiguration – Refiguration in muslimischen Reiseberichten. Berlin 2013; Michiel van Groesen, The Representations of the Overseas World in the De Bry Collection of Voyages (1590–1634). Boston – Leiden 2008; Almut Höfert, Den Feind beschreiben."Türkengefahr" und europäisches Wissen über das Osmanische Reich 1450–1600. Frankfurt – New York 2003.

3 Most of the relevant prints in the holdings of the Austrian National Library have already been digitized thanks to the "Austrian Books Online" project (ABO). The team of the "Travelogues" project is also collecting those prints that have not been digitized yet (e.g. due to their state of preservation).

of the prints (e.g. number of pages, inclusion of pictures, size), the background of their production (e.g. printing locations, publishers) and the persons involved in it (e.g. authors, publishers, printers), and intertextual relations between the individual publications (e.g. traditions of copying texts, inherent references).

4. *Analysis of the topics of 'otherness' and 'Orient' within the travelogues*. The project team is exploring possibilities of quantitative and qualitative analysis of these phenomena. The main challenges here are the development of analytical categories and methods for the evaluation of both topics, the linguistic and semantic changes, and the quality of automatic text recognition.

The developed tools will be easily adaptable to other languages and concepts, thus providing the basis for further research. The latest developments and code will be published on the project's website at www.travelogues-project.info. Further questions and ideas are always welcome.

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Anna Frasca-Rath

Research Landscapes of Digital Art History in Austria

There has been considerable change in the field of Digital Humanities in Austria in recent years with the establishment of the Austrian Centres for Digital Humanities (ACDH) at the Austrian Academy of Science (OeAW) in Vienna, the University of Vienna and the University of Graz.[1] This was accompanied by the appointment of the first two professorships in Digital Humanities (DH) in Vienna and Graz in 2016.[2] Besides these institutional changes concerning the broader field of DH, there has been a noticeable increase in digital art history (DAH) projects. Various initiatives at universities, research institutes and museums have created a dynamic and growing community of art historians working with digital tools. The Austrian Association of Art Historians (Verband österreichischer Kunsthistorikerinnen und Kunsthistoriker, VöKK) as well as the Austrian Museum Association (Museumsbund Österreich) have recently released special issues on digital art history in general[3] as well as on the museum in the digital age.[4] Methodological questions and case studies have been discussed in a number of international conferences and panels.[5] This short essay aims to provide a basic outline of the dynamic research landscape of DAH in Austria. Since it will not be possible to paint a comprehensive panoramic view by naming and analysing all ongoing projects, I will focus on three examples, pointing out further projects that cannot be treated exhaustively within this essay wherever possible.

When speaking about DAH in general, it has become common practice to differentiate between 'digital' and 'digitized' art history.[6] In this context, 'digitized' art history refers to "the use of online repositories and images", whereas

1 For the history of the Austrian Centre for Digital Humanities-OeAW, see https://www.oeaw.ac.at/acdh/about/history/, accessed 18.01.2019.

2 Anna Frasca-Rath, "Magisch-hightech-experimentell-bluesky-research-artig." Georg Vogeler (Graz) im Interview über die Digital Humanities und ihre Perspektiven. In: VöKK Journal (2017), 1, 9–11.

3 Four special issues on the impact of Digital Humanities were released in 2015, see Kunstgeschichte aktuell (2015), 1–4.

4 The special issue was entitled "Das Museum im Digitalen Raum". See Neues Museum. Die Österreichische Museumszeitschrift (2017), 3.

5 Most recently, for example, during the international conference "The Art Museum in the Digital Age", 10–11 January 2019, Belvedere Research Centre.

6 On the terminology of 'digital' and 'digitized' art history, see most recently Georg Schelbert, Digital Art History. Digitale Kunstgeschichte, Überlegungen zum aktuellen Stand. In: Piotr

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'digital' art history is characterized by "the use of analytic techniques enabled by computational technology".[7] This often fruitful distinction was introduced as early as 2000 by Claus Pias[8] and has since been discussed in various articles and essays. Johanna Drucker, for example, referred to it in her provocative essay entitled "Is There a 'Digital' Art History?" and published in a special issue of "Visual Resources" on Digital Humanities.[9] Moreover, the dichotomy was crucial for an article by Angela Dreßen published in 2017 that discusses the limits and possibilities of the digital for art history and differentiates once more the various fields and methodologies of the sector, such as big data, data mining, eye tracking, quantitative analyses, mapping and networking.[10] Georg Schelbert, however, has recently opened up a new perspective onto this long established dichotomy, arguing that it has led to rather questionable results.[11] He makes the point that the frequently attested lack of digital art history (in comparison with other DH disciplines) derives from the need for more digitized art history projects that will provide more qualitative data and thereby trigger the use of analytic techniques.[12] How such an interplay between digitized and digital art history can be achieved will be highlighted by the following three examples.

1. *Annotation and Image Analysis*. One of the projects with the longest traditions in Austria is REALonline,[13] an encyclopaedia for realia studies ("Realienkunde") housed at the Institute for Medieval and Early Modern Material Culture at the University of Salzburg. The project is headed by Ingrid Matschinegg and Isabella Nicka and is based in Krems. The initiative for it goes back all the way to the 1970s, when scientists began to capture, name and annotate realia—aspects of material culture—on visual source material in a systematic fashion.[14] To date, 28,500 objects have been identified and annotated within the image database. The large amount of data and their

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Kuroczynski / Peter Bell / Lisa Dieckmann (eds.), Computing Art Reader. Einführung in die Digitale Kunstgeschichte, 2018, 41–60, esp. 46.

7 See Johanna Drucker, Is There a "Digital" Art History? In: Visual Resources. An International Journal of Documentation (2013), 29, 5–13, esp. 7.

8 Claus Pias, Maschinen/lesbar. Darstellung und Deutung mit Computern. In: Matthias Brun (ed.), Darstellung und Deutung. Weimar 2000, 125–144.

9 Drucker, "Digital" Art History, 2013, see footnote 7, 5–13.

10 Angela Dressen, Grenzen und Möglichkeiten der digitalen Kunstgeschichte und der Digital Humanities. Eine kritische Betrachtung der Methoden. In: Kunsttexte.de (2017), 4, 1–17.

11 Schelbert, Digital Art History, see footnote 6, 53.

12 Schelbert, Digital Art History, see footnote 6, 53 and in particular footnote 41.

13 https://realonline.imareal.sbg.ac.at/en/, accessed 18.01.2019.

14 Isabella Nicka, REALonline. Explore and find out. Wohin führt 'das Digitale' die Kunstgeschichte. In: Verband österreichischer Kunsthistorikerinnen und Kunsthistoriker (VöKK) (ed.), Newest Art History. Wohin geht die jüngste Kunstgeschichte?, Vienna 2017, 223–235, esp. 226.

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specific structure have recently necessitated swapping out the relational database management system KLEIO for a graph-based database along with the exploration of innovative methods for visualizing the results.[15] As a consequence, much research was conducted on the architecture and data model of the existing database, and new technical solutions were developed in order to allow more complex and user-friendly queries. The new database went online in May 2017 and became a pioneer of graph-based databases in Austria.

2. *Digital Research Infrastructures, 3D reconstructions and visualization*. The database for the research project "Herrscherrepräsentation und Geschichtskultur unter Maria Theresia (1740–1780)" based at the Institute of History of Art and Musicology (IKM) at the OeAW was built for a different purpose. It does not aim to present the research of the involved art historians to the outside, but is instead intended purely for sharing research results within the group of associated scientists at the Austrian Academy of Sciences. As Stefanie Linsboth has explained in a recent paper, the database was implemented (within a larger framework of an art history database at the IKM) by the Austrian Centre for Digital Humanities-OeAW and designed to host images as well as archival sources and research results so as to facilitate collaboration between the team members.[16] Though all data are categorized according to common standards, a special thesaurus was also established to organize the material according to the research questions of the project.
   The potential for such internal research databases to produce fruitful results can be seen in another project likewise based at the IKM and entitled "Wiener Hofburg 3D-Quellenspeicher" (a collaboration between the IKM, the Architecture Collection at the ALBERTINA Museum, the Institute of Spatial Planning at TU Vienna and the Austrian Centre for Digital Humanities-OeAW). This research project, funded by the Go!Digital 2.0 initiative in 2016, explores new ways of visualizing research data, mainly archival resources such as documents or architectural drawings, in a three-dimensional space. It is based on data collected during the long-term project "Forschungen zur Bau-und Funktionsgeschichte der Wiener Hofburg", which took place at the OeAW between 2004 and 2015. During this earlier project, 3D reconstructions of the Vienna Imperial palace building were created and a large amount of visual and archival material was

15 Nicka, REALonline, see footnote 14, 227–228.

16 Stefanie Linsboth, Digitalisierte Forschung. Eine Datenbank als Arbeitsinstrument in einem Forschungsprojekt zu Maria Theresia, In: Verband österreichischer Kunsthistorikerinnen und Kunsthistoriker (VöKK) (ed.), Newest Art History. Wohin geht die jüngste Kunstgeschichte?, Vienna 2017, 238–241.

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collected within the abovementioned database. The new project is now investigating methods through which to transform the 3D model of the palace into a three-dimensional storage room ("Quellenspeicher"), allowing the information from the visual and archival sources to be explored in a virtual space.

3. *Provenance research*. Fields of study relying on source-based and empirical methods, such as the history of collecting and provenance research, have recently regained significance within art history research.[17] In 2016, the Vienna Centre for the History of Collecting[18] was founded as a collaboration between the Department of Art History at the University of Vienna, the IKM and the Austrian Centre for Digital Humanities-OeAW. The project approaches the documentation and analysis of collectors, collections and patterns of collecting in Vienna and Central Europe from a broader background encompassing art history and cultural history. It functions as a platform for a number of research projects, all of which incorporate their research results and data from inventories and auction catalogues into a common database. The resulting large amount of high-quality data from historical sources will enable art historians to ask new questions—and in the long term, it will enable researchers to obtain knowledge on patterns and cultures of collecting through quantitative analyses of the collected data, thereby promoting the use of analytic techniques.

As stated earlier, these three case-studies merely serve as examples for a larger number of DAH projects initiated at museums, universities and research institutes. These often interdisciplinary projects currently exhibit a methodological variety ranging from network analysis (APIS project)[19] to research databases (Exhibitions of Modern European Paintings 1900–1915)[20], eye tracking (CReA – Lab for Cognitive Research in Art History)[21] and 3D reconstruction and visualization (Wiener Hofburg 3D-Quellenspeicher).

The vast majority of digital initiatives, however, works with databases. There is a wide range of data collected in repositories and image databases—high quality data from digital art history projects that may offer perspectives for further analytical methods. Examples are research repositories (DiFab – Digital

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17 As Schelbert states in his essay on the perspective of Digital Art History, this is in contrast to the shift from traditional art historical research to visual culture studies that tie in more directly with questions of cultural and intellectual history. Schelbert, Digital Art History, see footnote 6, 51.

18 https://vchc.univie.ac.at/#/de/start, accessed 18.01.2019.

19 https://www.oeaw.ac.at/acdh/projects/apis/, accessed 18.01.2019.

20 https://exhibitions.univie.ac.at, accessed 18.01.2019.

21 https://kunstgeschichte.univie.ac.at/forschungsprojekte/labor-fuer-empirische-bildwissenschaft/, accessed 18.01.2019.

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Research Archive for Byzantium,[22] CIRDIS – Centre for Interdisciplinary Research and Documentation of Inner and South Asian Cultural History[23]), documentation efforts for digital art (ADA – Archive of Digital Art[24]), image and museum databases (e.g. Albertina Online,[25] Digitales Belvedere,[26] Hans Gross Kriminalmuseum[27]), digital exhibition projects (u:monuments,[28] The Gibson Trail[29]), digitization projects (Zentraldepotkarteien online,[30] Forschungsplattform Erdteilallegorien im Barockzeitalter[31]), virtual reality projects (Klimt's magic garden[32]) and museum apps (KHM stories[33]). Even this short list of just a few of the major projects reveals that methods like data mining, big data, artificial intelligence and computer vision are, as far as I am aware, needed within the research landscape of DAH in Austria.

One of the main short-term challenges for our field may therefore be to unleash the potential of already existing projects for further initiatives—and therefore first and foremost to intensify the dialogue between art historians and programmers working at different institutions. To this end, the Network for Digital Art History in Austria – DArtHist.at[34] was founded in November 2015. A first networking meeting was held during the conference "Newest Art History. Wohin geht die jüngste Kunstgeschichte?" as a cooperation between the Austrian Association of Art Historians (VöKK) and the Austrian Centre for Digital Humanities-OeAW.[35] The idea for such a network was spurred by the understanding that digital initiatives—which are always interdisciplinary and elaborate projects—require scientific networks for the exchange of ideas, to initiate debates on practical solutions and standards, and in order to bring together experts from different backgrounds such as museums, universities and research institutes. The main goal was simply to get in touch with one another and share personal knowledge by stimulating communication between

22 https://difab.univie.ac.at, accessed 18.01.2019.

23 https://www.univie.ac.at/cirdis/, accessed 18.01.2019.

24 http://www.virtualart.at/nc/home.html, accessed 18.01.2019.

25 http://sammlungenonline.albertina.at, accessed 18.01.2019.

26 https://digital.belvedere.at, accessed 18.01.2019.

27 https://gams.uni-graz.at/context:km, accessed 18.01.2019.

28 https://monuments.univie.ac.at/, accessed 18.01.2019.

29 http://www.gibson-trail.uk, accessed 18.01.2019.

30 https://www.zdk-online.org, accessed 18.01.2019.

31 https://erdteilallegorien.univie.ac.at, accessed 18.01.2019. See the respective paper in this volume.

32 https://www.mak.at/klimt_magicgarden, accessed 18.01.2019.

33 https://www.khm.at/erfahren/kunstvermittlung/app-khm-stories/, accessed 18.01.2019.

34 https://www.darthist.at, accessed 18.01.2019.

35 Andrea Mayr, How Art History Is Falling for the Internet. In: Kunstgeschichte Aktuell (2015), 4, 1.

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specialists from a variety of different institutions. A further purpose was to define common objectives in facing the challenges of the digital shift together. Exemplary for this initiative was the working group "Arbeitskreis Digitale Kunstgeschichte im deutschsprachigen Raum" that had been founded in Summer 2011 and pursues similar goals.[36] It was nevertheless felt that a more regional initiative with regular meetings and members working in "immediate vicinity" of one another was desirable for the local scientific community.

Since November 2015, DArtHist.at has been holding regular quarterly meetings that alternate presentations of research projects by associated members with thematic workshops (e.g. on image rights).[37] A website was created to provide a platform for projects and researchers to present their work and in order to "unveil the faces" behind the digital interface, thereby facilitating the establishment of contacts with kindred spirits. Through this initiative, which has hitherto organized meetings in Vienna, Graz and Linz, the somewhat vague contours of research landscapes for digital art history in Austria have been sharpened.

Instead of a short summary, I have decided to end this paper with an appeal directed at the Austrian universities: If we wish to confront the challenges of the digital age, then we must provide a proper education for students—future art historians, curators and researchers—so as to lay the foundations for a new sensitization to and sustainable engagement with digital data (e.g. the importance of standards and normative data) and offer them reliable tools for handling data from various sources. There are initiatives at Salzburg, Krems and Vienna where students are being taught certain aspects of digital art history. However, there is still a pressing need to further enshrine digital competence into the curricula of the Austrian universities. It is essential that digital source criticism be taught more in order to bring art history research into the 21st century.

36 For the history and mission of the Arbeitskreis Digitale Kunstgeschichte (Homepage: http://digitale-kunstgeschichte.de [accessed 18 January 2019]), see Schelbert, Digital Art History, footnote 6, 43–46; Piotr Kuroczynski / Peter Bell / Lisa Dieckmann, Einführung. In: Piotr Kuroczynski / Peter Bell / Lisa Dieckmann (eds.), Computing Art Reader. Einführung in die Digitale Kunstgeschichte. Heidelberg, 2018, 11–15, esp. 12.

37 All meetings held so far are listed on the website: https://www.darthist.at/aktivitaeten.html (accessed 18 January 2019).

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Karin Schneider, Stephan Kurz

https://maechtekongresse.acdh.oeaw.ac.at/

Digital Edition of the Documents of the Congresses of Aix-la-Chapelle, Troppau/Opava, Laibach/Ljubljana and Verona 1818–1822

1. Introduction

The Congresses of Aix-la-Chapelle (1818), Troppau/Opava (1820), Laibach/Ljubljana (1821) and Verona (1822) were crucial for the formation and functioning of the European system of powers in the nineteenth century. Nevertheless, these gatherings are largely marginalized in historiographic perceptions. Although the representatives of the European powers—namely Austria, France, Great Britain, Prussia and Russia—deliberated on security issues as well as slave trade, the fate of the Ottoman Empire and the constitution of the German Confederation, historical accounts of this period tend to simplify and undervalue the results of these negotiations.[1]

Various factors have impeded research on and analysis of these congresses. In German historiography, they are perceived as manifestations of reactionary political tendencies after the Congress of Vienna, which are subsumed under the pejorative label "Holy Alliance". Sometimes they are perceived as sequels of the Congress of Vienna that brought no political innovation for the European community of states. And last but not least, almost no written historical sources from these congresses were available in printed form. Over the years, some of the minutes and memoirs have been published, but they are not easy to access due to their different places of publication. Scholars interested in the topic therefore had to engage in extensive archival research and could not rely on printed editions.

This short paper presents the authors' joint efforts to create a state-of-the-art digital edition of these important historical papers. The first section outlines the historical context and the thematic contents of the documents. In the second

1 Remarkable exceptions in recent years are: Mark Jarrett, The Congress of Vienna and Its Legacy. War and Great Power Diplomacy after Napoleon. London – New York 2013; Heinz Duchhardt, Der Aachener Kongress 1818. Ein europäisches Gipfeltreffen im Vormärz. Munich 2018; Paul W. Schroeder, Metternich's Diplomacy at Its Zenith 1820–1823. Austin 1962; Guillaume de Bertier de Sauvigny, Metternich et la France après le Congrès de Vienne, vol. 2. Paris 1968.

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section, we discuss how we processed the resources (technicalities of the transcriptions in TEI-flavoured XML, the development of multiple access paths as discovery tools, and the technical platform we are using). The paper thus pursues a two-part objective: to further the use of our "Mächtekongresse" application, thereby facilitating both an improved understanding of the historical source material and—no less importantly—fostering new discourse on methodologies that make use of the digital paradigm.

2. The Congresses

The records of the Congresses of Aix-la-Chapelle, Troppau/Opava, Laibach/Ljubljana and Verona are kept in the Austrian State Archives (Haus-, Hof- und Staatsarchiv department) and have been transcribed and commented by Karin Schneider in a series of FWF-funded projects. This spares handling of the original papers and provides easier access to the proceedings of the congresses—and thus to resources on early nineteenth-century European history in the context of what has been dubbed the 'Concert of Europe'.

The Concert of Europe developed during the Napoleonic Wars. In 1813, the great powers contracted in the Treaty of Chaumont to not conclude separate peace treaties with France, but instead to fight Napoleon until his final defeat. Austria, Great Britain, Prussia and Russia renewed their alliance after Napoleon returned from Elba in March 1815, transforming it in November of the same year into the so-called Quadruple alliance, the nucleus of the European Concert of Powers. Article 6 of this treaty stipulated the periodical convocation of congresses to deal with issues of common European interest. In 1818, France was accepted into the alliance as a partner during the Congress of Aix-la-Chapelle, thus completing the quintet of the five European great powers.

But the agenda of the Congress of Aix-la-Chapelle included not just the reintegration of France into the European state system. It also provided a forum for problems already relevant at the Congress of Vienna that had not been solved in 1815. In other cases, the powers assumed the role of an arbitrator or an appeal body that mediated controversial issues.

On the one hand, the diplomats and statesmen present in Aix-la-Chapelle dealt with issues connected to the political upheavals that had occurred during the Napoleonic Wars. This included negotiations on border and custom disputes within the German Confederation, the fate of the Bonaparte family, the question of ceremonial rank in the diplomatic corps (which had already been discussed in Vienna in 1814/15), and the legal status of the Jews in the German Confederation. In addition, the plenipotentiaries addressed the conflict between Denmark and Sweden regarding Swedish indemnity payments as part

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of the obligations contracted in the Treaty of Kiel in January 1814, as well as the complaints of the inhabitants of Monaco against the governmental system initiated by their new prince.

On the other hand, certain topics negotiated in Aix-la-Chapelle also had a global or humanitarian character. Following up on the proceedings of the Congress of Vienna, the plenipotentiaries discussed the abolishment of the Atlantic slave trade, the fight against the Barbary pirates and the liberation of their Christian prisoners. A new issue related to the global order was South America. The revolutions there, as well as the conflict over Montevideo, were important points on the agenda of the statesmen and diplomats assembled in Aix-la-Chapelle. Moreover, the negotiators dealt with the fate of the former Swedish queen and her family.

The congresses of Troppau/Opava and Laibach/Ljubljana (1820/21) differed from the negotiations in Aix-la-Chapelle in that there was only a single issue on the agenda: the fear of new revolutions in Europe. In 1820, revolutions had broken out in Spain, Portugal and the Kingdom of the Two Sicilies. The new governments proclaimed the liberal Constitution of Cádiz of 1812, which limited the rights of the monarchic sovereign and—in the view of conservative statesmen and traditional monarchs—posed a threat to peace and tranquillity in Europe. The discussions and negotiations in these years not only evidence the fear of revolution but also reflect the complex relations between the European powers during this period and the connection between foreign policy and internal political considerations. The governments of France and Great Britain were both struggling with domestic problems and a strong opposition. Neither state sent official plenipotentiaries to Troppau/Opava in order not to stir up liberal headwinds at home; instead they opted to dispatch only observers. Nevertheless, the diplomats and statesmen signed off the proposal of Austria's foreign minister Metternich and, in 1821, decided to suppress the revolution in the Kingdom of the Two Sicilies. Furthermore, the plenipotentiaries decided to convene a new congress in the following year to discuss the end of the military occupation of Naples.

In 1822, the representatives of the European powers gathered in Verona. In the meantime, however, the results of the meetings at Troppau/Opava and Laibach/Ljubljana had been voided by the course of events: Following the revolution of 1820, Spain was in fact in a state on the brink of civil war, and from the perspective of the French government, this circumstance threatened peace and security in France. The most important topic on the agenda was thus the envisaged French military intervention on the Iberian Peninsula. But the plenipotentiaries deliberated not only on the difficult situation in Spain, they also dealt with political questions regarding Italy. In particular, they discussed the withdrawal of the occupation forces from the Kingdom of the Two

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Sicilies and the Kingdom of Sardinia-Piedmont after the revolutions of 1820 and 1821. Similar to the proceedings at Aix-la-Chapelle, the diplomats and statesmen assembled in Verona also spoke about various political, humanitarian and economic issues of European interest, e.g. the strained relations with the Ottoman Empire and —closely related—the Greek War of Independence, the Atlantic slave trade, the relationship between the European powers and the former colonies in South America, customs-free transport along rivers, and the fate and domiciles of members of the Bonaparte and Murat family along with legal claims deriving from the Napoleonic era.

The Congress of Verona was the last gathering on the basis of Article 6 of the 1815 treaty among the quadruple alliance. Seven years after the Congress of Vienna, this form of consultation practice had come to an end. The reasons for this development are complex and may be sought in the personalities of the actors and the shift of the political focus from Western and Southern Europe towards South-eastern Europe. The Greek insurrection and the reaction of the powers clearly showed their divergent interests in this part of the world.[2] They nevertheless continued their close cooperation and consultation: During the nineteenth century, several multilateral conferences at different diplomatic levels took place to deliberate on and regulate international conflicts. On more than 15 occasions, the representatives of the European powers discussed mediation strategies, engaged in conflict management and took concerted measures to increase diplomatic pressure with the goal of forestalling military confrontations and securing the peace.[3] Even though the Concert of Europe was not based on firm, institutionalised structures but mainly on the commitment of leading statesmen and monarchs, it continued to exist and function at least until the Crimean War that began in 1853. Several conferences and consultation meetings to regulate European affairs still took place in the second half of the nineteenth century, however—the practice only came to an end when World War I and the founding of the League of Nations in 1920 brought a decisive break.

The congresses can be interpreted as diplomatic manifestations of a new approach to international relations in the first decades of the nineteenth century. As Paul W. Schroeder has pointed out, the European system of powers moved towards cooperation and consensus in the wake of the Napoleonic Wars.[4] The Concert of Europe institutionalized international conferences to discuss problems concerning Europe and mediate between conflicting parties so as to

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2 See Miroslav Šedivý, Metternich, the Great Powers and the Eastern Question. Pilsen 2013.

3 See Matthias Schulz, Normen und Praxis. Das Europäische Konzert der Großmächte als Sicherheitsrat 1815–1860. Munich 2009, 684.

4 Paul W. Schroeder, The Transformation of European Politics 1763–1848. Oxford 1994.

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secure peace and tranquillity on the continent. Besides several ambassadorial conferences, the four congresses convened after the Congress of Vienna were means to achieve these ends.

3. Preliminary Work and Cooperation Partners

Transcription of the documents related to the congresses began in 2009 as part of the FWF-funded project "Der Wiener Kongress und sein europäisches Friedenssystem (P 21177)", headed by Reinhard Stauber (University of Klagenfurt). Karin Schneider finished this task in the scope of her project "Die Kongresse von Troppau und Laibach 1820/21 (P 28448)", likewise funded by the FWF. It was initially intended to publish the documents in a printed edition in the series of the "Kommission für die Neuere Geschichte Österreichs", but given the advantages of digital editions, this plan was discarded. Two arguments justify the edition: the goal of general accessibility of reliable transcripts of the Congresses' respective records (which could have been tackled in a 'traditional' paper-based edition as well), and the expansion to online accessibility without the need to physically travel to either the archives or a library holding a paper edition.

Two workshops on digital editing at the ÖAW provided important input and facilitated this decision, namely the ACDH Tool Gallery 3.1 "XML, TEI, OXYGEN: Einführung und Praxis" (Daniel Schopper and Ulrike Czeitschner) and the Summer School at the Institute for Modern and Contemporary Historical Research (INZ) in October 2017.[5]

Moreover, the ÖAW-ACDH, which serves as a service institution within the Austrian Academy of Sciences, provided technical support and a suitable infrastructure.

4. Transcription into XML

Following widespread good practice of digital scholarly editing, the transcriptions were created using the XML schema proposed by the Text Encoding

5 The Summer school was co-organised by the FWF project "Die Medialität diplomatischer Kommunikation (17. Jahrhundert)" (P 30091), the Institute for History at Salzburg University, and the Centre for Information Modelling at the University of Graz in cooperation with the *Institut für Dokumentologie und Editorik* (IDE).

Initiative (TEI P5).[6] Given that there are only individual archival records available as source materials in almost all cases, this represented an adequate solution that did not require much additional manual markup effort.[7] From the perspective of editorial scholarship, the "Mächtekongresse" edition adheres to the guidelines and good practice standards necessary to produce accurate textual representations of the documents.

In order to achieve this, a subset of the TEI namespace had to be used.[8]

In this short overview we cannot go into detail on the elements used, but we wish to point out that the TEI files are readily available for download both from the individual documents' metadata header blocks and through RestXQ.

The most frequent textual phenomena encountered in the edition files include contemporary additions and deletions, changes of scribes, recordings of paper damage, and additions and supplements by the editor. To add to the functionality of the resulting web application and link data deeply within the edition's fabric, references to named entities such as persons, places and institutions have been added as well. The edition currently distinguishes between directly mentioned `[pers|org|place]Names` and indirect references to them (e.g. `persName` is used if a part of a person's proper name is given, whereas a reference to the same person without explicit mention of their name is encoded as `rs type="person"`).[9]

Up to three scientific apparatuses are displayed throughout the edition documents: The editorial apparatus including commentary and notes on context is counted numerically (1, 2, 3, …). As soon as notes are present in the source documents, they are distinguished using alphabetical indices (a, b, c, …). A third apparatus, indicated by lowercase Roman numerals, is used in cases where longer phrases have been transcribed as textual variants.

When we began to develop and adapt the viewer application, the transcripts were already in an almost publishable form, but still needed to be corrected (in

6 In fact, some documents had been transcribed using MS Word text processing and then converted to TEI XML using the OxGarage tool http://oxgarage.tei-c.org/, accessed 22.02.2019, as all other websites in this contribution.

7 For a different approach concerning a similar textual genre with a differing textual source situation, cf. the representation of the records of the Constitutional Convention of 1787 that remodels textual events in a relational database: Quill Project (https://www.quillproject.net/quill). In this case, the negotiations underlying a collaboratively edited text like the US federal Constitution are represented as different types of events that result in different states of textual snippets at given points in time.

8 This refers in particular to the following TEI modules: `header`, `linking`, `core`, `textstructure`, `namesdates`, `transcr`, `textcrit`, `figures` and `msdescription`.

9 Note on country: Only instances of `place` are recorded in the `listPlace` index. Historical names of countries are not georeferenced, but still marked up using the `country` tag.

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regard to markup and language) and harmonised with respect to certain XML elements.

5. Interfaces as Access Paths to Historical Documents

Besides the abovementioned arguments for a digital edition, there is an even more significant advantage provided by the digital format: The edition's web application allows users to access the edition data in new ways that exceed the scientific value of the standardised markup constituting the edition.

Tables of contents are constructed from the file listings. The underlying files are labelled and sorted according to the locations of the congresses and a consecutive numbering that depicts the chronological order of the proceedings. This structure is used to arrange the documents themselves ("Dokumente"), the descriptions of the archival holdings ("Bestandsbeschreibungen") and the abstracts ("Regesten"). A spatial rendering of the origins of the edited documents is available directly on the landing page of the web application in the shape of a map showing the broader context of post-Napoleonic Europe.[10]

Two additional chronological access paths make use of the `@when` attributes in the `teiHeader` metadata representing the dating of the documents: a calendar view and a timeline view. While the calendar allows the documents (and the events that led to them) to be linked to a structured understanding of time (from years to months and days of the week), the timeline view offers an overview of the temporal continuum to which the documents relate from more of a bird's-eye view.

The relatively deep tagging of named entities in the TEI files—mostly person and place data, with only two institutions being listed separately—enables access to the edition data by means of indices created automatically from the encoded files. The `listPlace` index of places includes geodata that allows for a spatial pinning not only of the places where documents were generated, but also of all places that are mentioned within the edition text. Furthermore, all places mentioned include GeoNames identifiers to ensure interoperability with other resources in a linked open data approach as well as representation on any given map (in the current version, our web application makes use of the shortcut of contemporary GIS data via Leaflet/OpenStreetMap).[11] The same applies to

10 The monochrome map is based on a CC-licenced map "Europe 1820" by Andreas Kunz, Wolf Röss and Joachim Robert Möschl (https://www.ieg-maps.uni-mainz.de/mapsp/mappEu820Serie2.htm); it has been edited by Stephan Kurz and forms the background image for the entire web application.

11 This may be updated to a more accurate data set originating from the HistoGIS project involving the ÖAW-ACDH, https://histogis.acdh.oeaw.ac.at/, in a future feature release.

the reference data identifying persons, where we chose to use the authority filedata from the Virtual International Authority File (VIAF) to disambiguate persons and link them to the documents in a machine-readable fashion. The web application also provides access through an API, through a simple Beacon file and through JSON-based autocomplete data.

Abstracts are provided to describe the actual contents of the documents. These are provided in a separate list through the table of contents submenu as well as in the header section of the individual documents' views.

Conceptually complementary to the structured semantic approach, the web interface also offers a full-text search (implemented in Apache Lucene); its results (displayed in a `datatables` view) can be narrowed down on the fly simply by using a text input field.

6. Technicalities and Platform Choice

Since the ÖAW-ACDH was already taking part in the HRSM-funded project Kompetenznetzwerk Digitale Edition (KONDE) and our academic home institute, the Institute for Modern and Contemporary Historical Research (INZ), became involved in this network effort as well, our attention focused on choosing a technical solution from this environment for the web application. This predetermined our decision to use `dsebaseapp` as a blueprint for the development of an application for accessing the TEI edition data. `dsebaseapp` (dse stands for 'digital scholarly edition') was developed by Peter Andorfer at the ÖAW-ACDH as a starting point for edition interfaces; it is especially suitable for epistolary material since it is itself derived from the application designed for the letters of Leo Thun-Hohenstein.[12] With the help of a series of accompanying blog posts,[13] we proceeded to implement `maechtekongresse` as an application for the eXist-db platform.[14]

This choice was also influenced by the fact that the amount of data in the edition is relatively small, since it does not include image data and spans a total of 115 XML documents only. Moreover, due to the fact that there was no additional funding available, the software solution to be selected had to be "free" (as in software), and the ÖAW-ACDH already had server and network infrastructure in place to allow the use of an eXist-db approach. This infrastructure also

12 The latest iteration of this application can be found at https://thun-korrespondenz.acdh.oeaw.ac.at/pages/index.html.

13 See https://github.com/csae8092/posts/tree/master/digital-edition-web-app.

14 http://exist-db.org/. This toolset is notorious within the Digital Humanities context for various reasons; our experiences have been positive for the most part.

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includes the possibility to archive the edition data in ARCHE (A Resource Centre for the HumanitiEs).[15] Consequently, there were no viable alternatives available for our implementation.

The access paths outlined above are mostly based on preparatory work by the KONDE consortium, drawing in particular on the aforementioned `dsebaseapp` package that reuses XSLT transformation scripts written by Dario Kampkaspar (both he and Peter Andorfer are currently working at the ÖAW-ACDH). Since early 2018, the application has been refined in close collaboration between ÖAW-ACDH and INZ.

The "Mächtekongresse" edition has been available online at https://maechtekongresse.acdh.oeaw.ac.at/ since September 2018. The digital edition licences all edition data under the Creative Commons (CC-BY 4.0) licence, contributing to the digitally available research output of the Austrian Academy of Sciences and its Institute for Modern and Contemporary Historical Research. The digital edition has already been added as an external resource to the archival database to increase its visibility.[16]

With the publication of the "Mächtekongresse" edition, we hope to have contributed to further historiographical investigations into a crucial period in European history following the Napoleonic Wars and the Congress of Vienna, based on actual archival sources. On the technical and methodological flip side of our effort, we intend to continue the development of suitable tools that open up historical documents to new questions (and APIs).

7. Post Scriptum: Known Desiderata

1. Sources in the bibliography (`listBibl` in `listtreaties.xml` and `listWit` in `listwit.xml`) are currently flat text, precluding programmatic access.
2. Whitespace handling, especially in mixed-content XML nodes that contain both text and child elements, has still not been properly addressed. As a result, some links include trailing spaces preceding punctuation marks. In general, the authoritative version of the "Mächtekongresse" edition is the one transcribed in the TEI XML files; these should therefore be consulted in cases where the HTML representation raises doubts.

15 https://www.oeaw.ac.at/acdh/tools/arche/, repository based on Fedora Commons.
16 https://www.archivinformationssystem.at/detail.aspx?ID=341.

3. A network representation in GEFX format is in preparation; it is intended to depict the interrelations between congress sessions (and the resulting documents that form the edition) and the individuals taking part in them. Such a network view will allow the display of these relations in a chronotopical context.
4. All of the edition's documentary data has yet to be archived in the ARCHE service. Furthermore, the application's code will soon be made public under the MIT licence at the KONDE GitHub.[17]

The team is grateful for any feedback regarding the "Mächtekongresse" digital edition.

17 https://github.com/KONDE-AT/.

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Patrick Fiska

Conference Report: Digitizing Enlightenment III

Digitizing Enlightenment (DE) is a conference series that originally developed and grew around a small number of digital humanities projects on early modern intellectual history and is now establishing itself as a major driver of innovation in Digital Humanities. Following the first conference in Sydney in 2016, hosted by Simon Burrows of Western Sydney University, and the second gathering in Nijmegen in 2017, hosted by Alicia Montoya of Radboud University, the third conference in 2018—Digitizing Enlightenment III—was hosted by the Voltaire Foundation in collaboration with the "Cultures of Knowledge" project, the Maison Française d'Oxford, and the Centre for European History and Centre for Early Modern Studies at Oxford. It was also supported by the John Fell Fund and formed part of the Voltaire Lab. The main organizers were Nicholas Cronk, Gregory Brown and Glenn Roe.

Digitizing Enlightenment III was aimed specifically at the topic of historical prosopography and network analysis. Seven round tables were convened around a set of fundamental questions: Why prosopography? Why networks? (1), What are historical or intellectual networks? (2), What is social network analysis? (3), How to reconstruct a social network? (4), Who or what is excluded from networks? (5), What lies beyond networks, beyond prosopography? (6), How to link, sustain, and maintain networks? (7).

Seven individual projects were also presented between the round table discussions.

Following the opening remarks by Nicholas Cronk representing the hosting institutions, the first round table was dedicated to the question "Why prosopography? Why networks?".

Its first two talks dealt with prosopography in literary history, intellectual history and the history of books.

Simon Burrows spoke about the development of the conference series and the function of prosopographical research and output in certain projects rooted in the history of libraries, book markets and literary reception. Alicia Montoya identified networks of people, networks of catalogues, networks of individual books and their circulation, networks of specific editions of books (manifestation) and networks of works within the data sets of the book market research project (cf. http://mediate18.nl/).

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Howard Hotson presented a chapter from the handbook "Reassembling the Republic of Letters" edited by himself and Thomas Wallnig, explaining in detail the spectrum connected to prosopographical questions and problems. Gregory Brown underlined the often underestimated function of prosopography in history.

Arno Bosse and Miranda Lewis subsequently demonstrated the prosopographical aspects of the EMLO (Early Modern Letters Online) project and explained how the tools have developed. (cf. emlo.bodleian.ox.ac.uk).

The second round table, convened by Gregory Brown, addressed the question "What are historical or intellectual networks?". Laurence Brockliss lectured on the problems and difficulties of implementing DH platforms and the dependence of the scholars on technical support—and therefore the need to ponder the scientific question using the set of digital methods. Keith Baker also dealt with epistemological and methodological questions in regard to digital processing. He pleaded for a return to the Age of Enlightenment as an intellectual phenomenon and the study of political models like the making of collective decisions, as in the case of the declaration of human rights, using digital tools.

Ruth Ahnert demonstrated how the questions of communities, networks and collective biographies function in the study of the Protestants under Queen Mary I., where scholars are attempting to determine the information flow and informal meetings based on the itineraries of individuals.

Pierre Musitelli introduced a number of Italian projects on enlightened letters in Padova and shared insights from his fascinating project about the "Accademia dei Pugni" in Milan and the correspondences of Cesare Beccaria and Andrea Verri on criminal law, which were discovered on the basis of a systematic study of the Verri Archives' manuscripts, kept in Milan by the Mattioli Foundation, with digital tools.

Simon Burrows presented his two projects entitled FBTEE and MPCE on book trade and the reception of books. Similar in their goal, both projects aim to reconstruct popular reading trends to revise our understanding of European enlightenment and the transformational impact of print. They analyse different sources, however: The "French Book Trade in Enlightenment Europe" (FBTEE) project mapping the production, marketing, dissemination, policing and reception of books (and hence ideas) during the late eighteenth century is based on the archival materials and catalogues of the trade kept by the Société Typographique de Neuchâtel. "Mapping Print Charting Enlightenment" (MPCE) uses a database of banned books tracking millions of copies of thousands of titles across all sectors of book trading—legal, pirate and contraband. (cf. www.fbtee.uws.edu.au)

The next round table with Arno Bosse as chair revolved around the question "What is social network analysis?". Sebastien Ahnert explained some basic

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principles of social network analysis in the social sciences, and data analyst Chico Camargo spoke about topic research and topic modelling. Katherine Eccles of the Oxford Internet Institute, who is involved in the museological project "Cabinet", discussed networks as historical evidence. Chris Warren first lectured on cognitive theories like the function of becoming viral, and then gave an individual presentation dedicated to the relatively well-known project "Six Degrees of Francis Bacon". (cf. www.sixdegreesoffrancisbacon.com)

The final round table of the first conference day, convened by Jess Goodman, focused on the question "How to reconstruct a social network?". Melanie Conroy of the "Salons" project, Miranda Lewis of EMLO and Geoffrey Turnovsky from the Department of French & Italian Studies at Washington University talked about the question of what scholars need to know about individuals to position them within social networks? This field also includes the issue of how to record the required attributes and the question of authorities and disambiguation.

Melanie Conroy gave an overview of the spectrum of projects originating at Stanford University, including Palladio and the Encyclopédistes, Salons, Procope etc., some of which were also the subject of a later individual presentation (cf. below). Miranda Lewis referred to EMLO once again, illustrating the development from a simple card catalogue and pointing to the disambiguation process.

In the evening, the conference participants were invited to a reception and dinner at Balliol College generously sponsored by the Bodleian Libraries.

The second conference day opened with an impressive presentation of the "Quill" project by Nicholas Cole, who explained the necessary organisational steps and how to implement digital programs in cooperation with public institutions.

Round table number five was convened by Andrew Kahn and addressed the question "Who or what is excluded from networks?". Chloe Edmondson spoke for the Stanford "Salons" project, discussing the lack of comprehensive documentation—e.g. the problems of documenting the presence of the women in Julie de Spinoza's salon. Patrick Fiska spoke on behalf of three projects, namely the digital aspects of the "Pez" project, the "Virtual Library of the Charterhouse at Gaming" and NAMPI (Nuns and Monks – Prosopographic Interfaces), focusing on the issue of the overlap of religious communities and the Republic of Letters. Kelsey Rubin-Detlev introduced the project for the digital edition of the letters of Catherine the Great, and Nicholas Quill offered observations on keyword searches using artificial intelligence in some DH projects in the field of political history.

The next individual project presentation was given by Katie McDonough on an "Early Modern Digital Gazetteer". (cf. library.stanford.edu/research/cidr).

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Round table six ("Beyond networks, beyond prosopography?") was convened by Robert Morrissey and featured the speakers Mikkel Jensen, Mark Olsen, Christopher York and Lena Zlock. It focused on the subject of networks as visualisation tools as well as on non-prosopographical networks. Mikkel Jensen spoke about the VIA visualization tool developed together with Marco Quaggiotto and Joëlle Weiss. Marc Olsen dealt with the relations of Rousseau and Robespierre. Christopher York presented astonishingly different and unexpected forms of network visualisations. Lena Zlock discussed the digital presentation of Voltaire's library. Finally, Mikkel Jensen presented his project on early modern natural law scholars from Scandinavian countries and introduced a new event-based data model. (cf. www.republicofletters.net)

Round table seven on the topic of "How to link, sustain, and maintain networks?" was convened by Kathryn Eccles and included speakers currently or formerly connected to the research of the Oxford Internet Institute, with the exception of Katie McDonough from Stanford: Terhi Nurmikko-Fuller, David Robey and Pip Wilcox. It was a mostly technical section that presented the broad spectrum of possibilities in DH. The speakers talked about linking prosopographical data, sharing, interoperability, sustainability and meta-networks (networks of networks).

The final individual project presentation was given by Melanie Conroy and Chloe Edmondson on the "Salons" project hosted at Stanford. It showcased the prosopographical approach used to identify all participants, contributors and guests of the salons. (cf. blogs.memphis.edu/salonsproject).

The last and more general roundtable, entitled "Where do we go from here?", was convened by Gregory Brown and Glenn Roe and included Howard Hotson, Rob Iliffe, Robert Morrissey and Catriona Seth. It was dedicated to the discussion of upcoming and future steps in this collaborative effort.

While Howard Hotson underlined the role of the scholar, Rob Iliffe took a more pessimistic view of Digital Humanities, declaring that machines had already taken over.

All debaters pleaded for further cooperation among the DE projects. The decision was ultimately made that the group should aim to organize another event either during or close to the 2019 ISECS International Congress on the Enlightenment in Edinburgh.

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Klemens Kaps, Kolja Lichy

Conference Report: The Four Wings of Mercury

The topic of the Habsburg lands in Central Europe as an economic area is anchored in a relatively lively historiographic tradition whose beginnings extend back to the 1960s and which has since achieved a certain international dimension[1] that has provided essential impulses—in particular to economic history as pursued in Austria. As a number of recent studies illustrate,[2] the economic history of Habsburg Central Europe can also be discussed—at the latest since the standard works of researchers such as Herman Freudenberger, David Good and John Komlos in the 1970s and 80s[3]—beyond established and often distorting concepts of modernization theory such as "backwardness", persistence of traditional structures, or lack of internal market integration. Nevertheless, the position of the late Habsburg Empire vis-à-vis Western European economic centres has even recently still been discussed from the perspective of a "catching up" or "falling behind" development, even though the outcome of this debate now appears to be largely undecided.[4]

Habsburg Central Europe is thus firmly established as an economic-historical object for the exploration of growth, development and supra-regional spatial

1 Cf.e.g. Hermann Freudenberger, The Woolen-Goods Industry of the Habsburg Monarchy in the Eighteenth Century. In: Journal of Economic History 20 (1960), 383–406; idem, Freudenberger, Herman, State Intervention as an Obstacle to Economic Growth in the Habsburg Monarchy, in: Journal of Economic History 27/4 (December 1967), 493–509; Nachum Thomas Gross, Austrian Industrial Statistics 1880–1885 and 1911/13. In: Zeitschrift für die gesamte Staatswissenschaft, 24/2 (1968), 35–69; idem, Die Stellung der Habsburgermonarchie in der Weltwirtschaft. In: Alois Brusatti (ed.), Die Habsburgermonarchie 1848–1914, vol. 1: Die wirtschaftliche Entwicklung. Vienna 1973, 1–28.

2 Andrea Komlosy, Grenze und ungleiche regionale Entwicklung. Binnenmarkt und Migration in der Habsburgermonarchie. Vienna 2003.

3 Hermann Freudenberger, The Industrialization of a Central European City. Brno and the Fine Woollen Industry in the 18th Century. Edington/Wilshire 1977; David Good, The Economic Rise of the Habsburg Empire, 1750–1914. Berkeley 1984; John Komlos, The Habsburg Monarchy as a Customs Union: Economic Development in Austria-Hungary in the Nineteenth Century. Princeton 1983; idem, Nutrition and Economic Development in the Eighteenth-Century Habsburg Monarchy. An Anthropometric History. Princeton 1989.

4 Cf. David Good, The Economic Lag of Central and Eastern Europe: Evidence from the Late Nineteenth-Century Habsburg Empire. Working Papers in Austrian Studies 93/7 (December 1993); Max-Stephan Schulze, Regional Income Dispersion and Market Potential in the Late Nineteenth-Century Hapsburg Empire. Working Papers in Austrian Studies 106/07 (November 2007).

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integration. Still, the reception of the abovementioned studies in overview presentations, syntheses or monographs with far-reaching explanatory claims at the macro level cannot always be taken for granted.[5] The persistence of undifferentiated and mostly backwardness-related narratives in regard to the Habsburg Monarchy, which overlaps to a large extent with a pejoratively oriented discourse on Eastern Europe,[6] can also be explained with the lack of studies applying a comparative and historical perspective and going beyond already existing GDP calculations.[7] A comparative perspective could systematically situate Habsburg Central Europe within the debate about the history of economic development. At the same time, recent studies on the history of economic supra-regional interdependence — especially those by economic historians Andrea Komlosy and Allison Frank based on the consideration of commodity chains as well as social and political historical approaches — have illustrated the integration of Habsburg regions into contexts from the supra-regional to the global during the 18th and 19th centuries.[8]

This interactive approach can be pursued in a variety of ways as well as being extended more strongly to the areas of trade and finance. It is likewise important to trace this perspective further back in time than around 1870 — further back even than 1800 — in order to examine structures and processes with long-term effects. This addresses another desideratum in regard to the research conducted to date, namely its relatively narrow focus on the late 19th century despite the fact that historians such as Herman Freudenberger, Andrea Komlosy and David Good specifically included the late 18th century in their analyses.

The conference "The Four Wings of Mercury: Trade and Finance in the Habsburg Monarchy between Entanglement and Comparison (16th–18th Century)" took place on 30 November and 1 December 2018 at the Institute for Economic

5 Cf.e.g. the interpretations of the Habsburg monarchy in a recent highly-influential study in the spirit of NIE: Daron Acemoglu / James A. Robinson, Why Nations Fail. The Origins of Power, Prosperity, and Poverty. New York 2012.

6 Larry Wolff, Inventing Eastern Europe. The Map of Civilization on the Mind of the Enlightenment. Stanford 1995.

7 An early exception to this tendency can be found in Gross, although he focuses on the second half of the 19th century and relies strongly on the narrative of backwardness based on modernization theory. Andrea Komlosy's recent studies break new ground from a global perspective: Andrea Komlosy, Chinesische Seide, indische Kalikos, Maschinengarn aus Manchester. "Industrielle Revolution" aus globalhistorischer Perspektive. In: Margarethe Grandner / Andrea Komlosy (eds.), Vom Weltgeist beseelt? Globalgeschichte 1700–1815. Vienna 2004, 103–134.

8 Andrea Komlosy, Austria and Czechoslovakia: The Habsburg Monarchy and the Successor States. In: Lex Herma van Voss / Els Kuperus-Hiemstra / Elise Meerkerk Van Nederveen (eds.), The Ashgate Companion to the History of Textile Workers, 1650–2000. Farnham – Burlington 2010, 43–73; Alison Frank, Continental and Maritime Empires in an Age of Global Commerce. In: East European Politics and Societies 25/4 (2011), 779–784.

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and Social History at the University of Vienna. Its aim was to take on two of the research desiderata described above and discuss them in detail based on eleven contributions: On the one hand, the conference focused on the cross-border interactions of Habsburg Central Europe in trade and finance, and on the other it made the treatment of these fields of economic history during the early modern period between the 16th and 18th centuries the subject of discussion. The generous financial support for the conference by the Thyssen Foundation, the Dean's Office of the Faculty of Historical and Cultural Studies at the University of Vienna, and the Eastern Europe Centre at the University of Giessen made it possible to convene researchers from various European countries including Slovakia, Hungary, Italy, Belgium, France, Germany and Austria to discuss this complex and wide-ranging topic. As this abridged list of countries makes clear, it was also an explicit concern to cover the early modern Habsburg territorial possessions as comprehensively as possible. Nevertheless, a few regions were missing—most notably the Banat, Lombardy and Bohemia.

The question of commercial processes of exchange and entanglement was not only addressed for broad relations from a global perspective in the sense of foreign relations, but also for intra-Habsburg entanglement processes in the sense of trans-local and supra-regional spaces of interaction. For such a perspective regarding the early modern Habsburg Monarchy, recent works by Peter Rauscher, Andrea Serles and Christine Lebeau that have opened up horizons beyond individual national historiographic perspectives should be mentioned.[9]

The trade history focus characteristic of these works also served as a guideline for the conference whereby trade and finance were understood as interconnected spheres of circulation under the category "commerce" based on the cameralistic political economy.[10] The fact that trade and finance could exhibit a close connection in the sense of an early modern understanding of commerce is exemplified in the definitional efforts by Johann Joachim Becher, Philipp

9 Christine Lebeau, La république des administrateurs, une société mediate (deuxième moitié du XVIIIe siècle). In: Pierre-Yves Beaurepaire (ed.), La plume et la toile. Pouvoirs et réseaux de correspondence dans l'Europe des Lumières. Arras 2002, 273–287; ead., Chiffres privés, chiffres politiques. L'inconcevable publication des Bilans de Pietro Verri (État de Milan, deuxième moitié du XVIIIe siècle). In: Dominique Margairaz, L'information économique. Production et circulation. Paris 2008, 201–225; Peter Rauscher / Andrea Serles, Die Wiener Niederleger um 1700. Eine kaufmännische Elite zwischen Handel, Staatsfinanzen und Gewerbe. In: Österreichische Zeitschrift für Geschichtswissenschaften 26/1 (2015), 154–182.

10 Kolja Lichy, Die Kompetenz des Kommerzienrates. Karl von Zinzendorf und ökonomisches Wissen als administrative Karriereoption. In: Marian Füssel / Philip Knaeble / Nina Elsemann (eds.), Wissen und Wirtschaft. Expertenkulturen und Märkte vom 13. bis 18. Jahrhundert. Göttingen 2017, 191–215.

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Wilhelm Hörnigk's brother-in-law. In his repeatedly reissued "Political Discourse", Becher described trade allegorically with the four wings of Mercury: While reason and determination were necessary individual qualities for successful market players, freedom of circulation—at least within the Habsburg context—and capital were the indispensable basic conditions of trade.[11] The extent to which trade was closely linked to financial engineering issues can be seen, among other things, in the 'arithmetization' of the everyday practice of trade down to the level of individual households.[12]

This is not to suggest that trade and finance inevitably had to interact in a direct and necessarily, always verifiable manner. Rather, the contemporary terminology of commerce was used as a starting point for an inquiry into their reciprocal relationships as well as their dividing lines and differences. The conference focused on the structural conditions under which commercial modes of economic activity emerged, flourished and were reproduced, as well as on the specific forms of action of individual and collective agents, including network formations.[13]

In this context, the contemporary assessments of spatial radii of action, the criteria for the success or failure of economy, epistemologies of trade and financial techniques, and the examination of drafts of political economies as frameworks of action within the Habsburg context are of importance. Accordingly, special attention was paid to the question of the "freedom" of commerce — as demanded by Becher — under the often differing legal conditions and customs frontiers within the Habsburg conglomerate.

In this sense, the conference could not restrict itself to any specific official measures, administrations or legislation; rather, it concentrated on the discourses and practices of the authorities in interaction with market players. These theoretical guidelines were applied by the speakers at the conference in three key fields of commercial practice: First and foremost was the question of integrating the Habsburg regions into world trade and what has been discussed in recent years as "proto-globalization", the "first globalization" or the "first

11 Johann Joachim Becher, Politischer Discours, 1667.

12 Franka Miriam Brueckler / Vladimir Stilinović, Teaching Arithmetic in the Habsburg Empire at the End of the 18th Century: A Textbook Example. In: Historia Mathematica 40 (2013), 309–323.

13 Cf. Klemens Kaps, From the Atlantic to Milan and Vienna. Communication Strategies of the Imperial Consul in Cádiz, Paolo Greppi (1774–1791) between Diplomacy and Business. In: Silvia Marzagalli (ed.), Les consuls en Méditerranée. Agents d'information et de contre-information (XVIe-XXIe s.). Nice 2015, 201–218; idem, Small but Powerful: Networking Strategies and the Trade Business of Habsburg-Italian Merchants in Cádiz in the Second Half of the Eighteenth Century. In: European Review of History/Revue européenne d'histoire 23 (2016), 427–455.

global age".[14] In particular, the traditional narrative according to which the Habsburg Monarchy was increasingly cut off from supra-regional European and global markets beyond Central Europe as a result of the relocation of the world economic centres within Europe to the Atlantic during the early 17th century, as well as due to its own protectionist customs policy from the late 17th century onwards, was to be questioned.[15] Building upon this perspective, the second main topic of the conference was the investigation of the connection between short- and long-distance trade, between Habsburg domestic market formation and participation in international foreign trade including maritime and colonial trade. The question of trade organization and financing instruments played a key role in this respect. Thirdly, the conference focused on the credit system, with the interplay between internal and external interdependencies representing an important area of interest. The corresponding papers focused not on the comparatively well-researched lending in the public sector, but on the functioning of private credit systems and their links to trade.

The first section of the conference on "Commerce and Finance" was opened by Attila Tózsa-Rigő (Miskolc) with a detailed analysis of the business transactions of the Augsburg trading house Paller & Weiss with the Viennese court during the last quarter of the 16th century. The Court Chamber was finding it increasingly difficult to pay back the extensive loans it had taken out from the traders in terms of both interest service and repayment of the principal sums. As a result, starting in 1569, the Court Chamber and the emperor granted Paller & Weiss the right to exploit the copper in the Upper Hungarian mines of Neusohl/Banská Bystrica. This applied not only to the performance of copper mining, but also to the commercialization of the extracted metal, which was sold via Cracow/Kraków, Teschen/Těšín/Cieszyń and Breslau/Wrocław to Hamburg and Amsterdam, but also via Antwerp, Venice, Augsburg and Lyon. Other points of sale such as Gdańsk played a more subordinate role, with sales increasing via Hamburg and

14 Christopher A. Bayly, The Birth of the Modern World, 1780–1914: Global Connections and Comparisons. Oxford 2004, 27–48; J.B. "Jack" Owens, Dynamic Complexity of Cooperation-Based Self-Organizing Commercial Networks in the First Global Age (DynCoopNet): What's in a Name?. In: Ana Crespo Solana / David Alonso García (eds.), Self-Organizing Networks and GIS Tools. Cases of Use for the Study of Trading Cooperation (1400–1800). In: Journal of Knowledge Management, Economics and Information Technology (2012), 25–52; Jan De Vries, The Limits of Globalization in the Early Modern World. In: Economic History Review 63/3 (2010), 710–733; Dennis O. Flynn / Arturo Giráldez, China and the Birth of Globalization in the 16th Century. Farnham – Burlington 2010; Kevin H. O'Rourke / Jeffrey Williamson, When Did Globalization Begin?. In: European Review of Economic History 6 (April 2002), 23–50.

15 Concerning this thesis, cf. Zsigmond Pál Pach, The Role of East-Central Europe in International Trade (16th and 17th Centuries). In: idem, Hungary and the European Economy in Early Modern Times. Aldershot 1994, 217–264, here 217, 259.

Venice after the second copper lease agreement of 1572. The Paller & Weiss Group was able to turn a considerable profit with this business and, in a difficult economic phase during which numerous wholesale bankruptcies occurred in Augsburg, managed to not only secure the survival of its business, but to forge ahead with a considerable expansion of its activity. The copper business thus proved to be a successful crisis-overcoming strategy that further promoted the high social status of the shareholders — as the election of Wolfgang Paller as mayor of Augsburg from 1569 to 1582 proves. As noted in the discussion during the conference, the motives for Paller and Weiss's conclusion of their contracts with the Court Chamber remain partly unclear. Above all else, the Chamber's failure to adjust the sale prices for copper stipulated in the agreements, which resulted in a considerable loss of several hundred thousand guilders for the Chamber at the turn of the 16th to 17th century, stands out.

Kolja Lichy (Gießen) shifted the focus to the 18th century and presented a case study from his ongoing habilitation project on public loans based on the comparison of pawnshops in the Austrian and Bohemian lands as well as the Austrian Netherlands. The Moravian Lehnbank founded in 1751 was selected for examination from this large number of "public bank projects", as Lichy's title put it. Originally founded by the Moravian Estates and the Viennese court as a credit or investment institution for orphan and widow funds as well as poorhouses, the Lehnbank soon began to engage in various activities extending far beyond the actual tasks of a financial service provider as defined by its statutes. In the 1760s, the bank was involved in numerous manufactory founding projects as well as in trading activities like the sale of Moravian woollen fabrics in the Mediterranean region on the Italian peninsula via Trieste and, via Marseille, in the British colonies of North America. But the institute was also active in retail trade within the Habsburg countries. These wide-ranging business activities contrasted with a very narrow capital base, however, and despite the greater ambitions connecting the Vienna Commercial Administration to the Lehnbank, it was ultimately for this reason that lending in the regional and local context remained the institution's core business. The business capital was borne by shareholders, who on the one hand extended beyond the noble Estates—including, for example, the cloth makers' guild in Iglau/Jíhlava, which in itself suggests a connection to the production sphere and corresponding commercialization strategies for Moravian woollen cloth. On the other hand, the majority of shareholders were located outside of Moravia, namely among the Viennese civil servants and financiers, which further underscores the Lehnbank's close ties to the political centre in Vienna and the state. The long-distance trade represented only a small part of the institute's business and amounted to only about a third of the money spent on credit transactions, but nevertheless made the bank the largest exporter of Moravian woollen goods to Italy in the

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1760s. Not least due to the low capitalization of the Lehnbank, however, its mercantile transactions in Italy proved increasingly unsuccessful—though it is difficult to trace its long-distance trade business beyond Trieste from the 1770s onward due to the scarce archival sources.

In the presentation concluding the first section, Christine Lebeau (Paris) devoted a detailed and innovative analysis to the Habsburg political economy, raising the question of the extent to which the concept of cameralism as an independent direction in enlightened economic theory could be meaningfully maintained. She saw the deconstruction of the concept of cameralism occurring on two levels: Firstly, the focus on the international level made it possible to display the reception of various currents and ideas of political economy in Europe, with French economic theories playing a special role therein. Lebeau explained this transfer of ideas using the example of the director of the Second Oriental Company in Trieste, Franz von Raigersfeld, who explicitly referred to Montesquieu in a memorandum of 1720. It became clear that the focus on customs policy was too limited, since tax policy in particular also played a key role in the development of economic concepts between their theorization and political practice, as shown by the discussion on the introduction of excise duties in 1696 under Emperor Leopold I. Secondly, while this perspective on the history of entanglement and transfer elucidated the intense interaction between economic policy currents in 17th- and 18th-century Europe, thereby questioning the concept of an independent cameralism, the existence of a uniform cameralism can also be problematized by including the regional levels. Contrary to all the centralization efforts of the 18th century, regional interests and institutions—represented among others by the institution of regional Commercial Councils (the *Kommerzkonsesse*)—remained influential and played a decisive role in shaping the design of economic policy "from below". Statistics—the application of which was heavily promoted during the second half of the 18th century but which, as became clear in the discussion, had already been developed long before in rudimentary forms—made it possible to precisely measure and assess the effects of economic policy measures. The actual production of statistical reports lagged behind events, so that it was not until 1786 that reliable statistics for the domestic customs area of the Austrian and Bohemian Lands created in 1775 were produced by Karl von Zinzendorf.

The second section of the conference was devoted to intra-European trade links between the Habsburg countries. Andrea Serles (Vienna) presented an analysis of shipping trade on the Danube during the late 1600s and the first half of the 18th century using data from the Aschach Danube toll registers, which she had prepared and edited in the form of a digital database in an individual project funded by the FWF under the direction of Peter Rauscher. The records of the private toll station of the Upper Austrian market town

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of Aschach, which are kept in the Depot Harrach in the Upper Austrian Provincial Archives, provide not only a detailed and comprehensive overview of the goods transported on the Danube, since even customs-exempt products were recorded. They also identify the transporters, i.e. the skippers, their respective departure points and destinations, and the merchants among whom the goods were exchanged. This unique information allowed Serles to trace the spatial pattern of trade flows: The bulk of shipments passing through Aschach went down the Danube, with the most important origins of consignments being Hall in Tyrol, Regensburg (with Nuremberg), Ulm and Linz. Other Danube ports lagged far behind. This strong spatial concentration refers to the combination of land and river transport routes, with traditional channels of communication retaining their importance even in the early 18th century. There were comparatively few upstream trade flows, which were nevertheless important for the conveyance of goods, however. A broad spectrum of goods was traded, with textiles and colonial goods representing the most frequent items. Key products such as salt were not registered by the Aschach customs station due to the transport geography. Styrian and Upper Austrian scythes, straw knives and sickles were transported up the Danube, as was mercury from the Idria/Idrija region of Carniola, which was administered by the sovereign's legal monopoly (*Regal*). Charles VI's customs policy also had a decisive influence on trade along the Danube, as shown clearly by the tariff increase of 1726, which led to an abrupt decline in the transport of goods via Aschach. Particularly heavily affected was the fustian coming from Augsburg, which—unlike colonial goods—could easily be substituted. Overall, the state-driven shift in the function of customs duties from a fiscal source of income to an economic policy instrument was already very evident, as the differentiation into import, export and transit duties proves.

While this analysis of trade using the Danube provided a first indication of the integration of the Austrian lands into a European or even global division of labour, the subsequent contributions by Michael W. Serruys (Brest) and Jan Parmentier (Antwerp) illustrated the full extent of Habsburg participation in the world economy of the 18th century. Serruys's contribution referred to the internal infrastructure and transport geography of the historiographically often forgotten "plus belle(s) province(s)" of the Habsburg lands according to Maria Theresia, analysing how the fragmented competences among cities and counties inhibited road construction within the Austrian Netherlands during the early 18th century. Only the gradual overcoming of institutional barriers, supported by the officials Friedrich August von Harrach from Vienna and—somewhat later—Anton Wenzel von Kaunitz, eventually led to a considerable expansion of the road network and thus to an acceleration and cost reduction in goods transport. Internal tolls and customs duties nevertheless remained in place

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unlike in the Austrian and Bohemian lands, where they were lifted in 1775. But the income from transit duties amounted to only 10 percent of all customs revenues. This not only made it possible to overcome the economic policy setbacks under the reign of Charles VI, from the Barrier Agreements (1715) to the suspension (1727) and dissolution of the Ostend Company (1731), but also laid the foundations for a prosperous economic development that manifested itself clearly in the industrialization of the 19th century.

Jan Parmentier's analysis of the development of overseas trade using the port of Ostend showed that this internal integration was also linked to integration into global markets by way of massive improvements to the transport infrastructure. Originally promoted as an emergency solution following the blockade of Antwerp's traditional maritime trade centre by the Barrier Agreements, Ostend succeeded in becoming the key hub for the Austrian Netherlands' global maritime trade despite initial setbacks and obstacles such as the dissolution of the Company in return for the recognition of the Pragmatic Sanction ordered by Charles VI. The culmination of maritime exchange of goods mediated by Ostend came in the last quarter of the century, when new companies were founded to boost direct trade with India and China as well as with the focal points Boston, New York, Philadelphia, Charleston and Baltimore in the now independent USA. These new business opportunities were based on the elevation of Ostend to a free port (1781) and the expansion of shipping under the imperial flag on the one hand and on the proto-industrial development of the Austrian Netherlands's economy on the other. The latter provided enough export goods for direct shipping to the American and Asian markets and eliminated the stop in Cádiz, which had been necessary until the 1770s to accommodate silver cargoes. The new circumstances attracted numerous merchants from various European countries—most importantly from Great Britain—to Ostend, from where they established or strengthened their networks in America and Asia and notably imported rice, tobacco and cotton textiles for printing in the Austrian Netherlands, Switzerland and Alsace. Ostend was likewise involved in various other activities like the slave trade by the Brussels trading house of Friedrich Romberg. The connections with East India orchestrated from Ostend by private international merchant networks were larger in volume in the 1780s than the trade of the British East India Company and could benefit from cheaper freight rates than those on British ships. While trade was conducted through Ostend, the trading houses financing these transactions were located in Antwerp, so that the trade boom at Ostend also heralded the return of the port of Antwerp.

The third panel focused on trade links within the Habsburg dominions and the wider European framework. Miroslav Lacko (Ostrava/Jena) used the example of Upper Hungarian copper and silver to demonstrate the close connection between production, trade and financing. In his contribution, he showed how

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metal mining and the manufacture of semi-finished products were made possible through financing by contractors (*Verleger*) in the second half of the 16th century. The latter were located in trading towns on the outskirts or far north of the actual mining areas, partly still in Upper Hungary itself (Leutschau/Levoča, Käsmark/Kežmarok, Kaschau/Košice) or even in Wrocław. Above all else, however, they also reached into the kingdom of Poland — primarily to Cracow, but even up to Gdańsk. Lacko pointed out that the geographical and systematic interdependencies of production, trade and financing were also reflected in the personnel networks of the elites in the metal trading cities. The example of the urban elites of Leutschau/Levoča illustrated how family and trade links complemented and stabilized each other. The networks reached a considerable geographical extent and, starting from Leutschau, included not only the other production sites such as Schmöllnitz/Smolník themselves — in fact they extended via Krakow all the way to Vilnius. Lacko's concluding statement that effective copper mining in the course of the 16th century far exceeded the export figures recorded in the Hungarian customs registers (*Dreißigzollregister*) led to an intense debate focusing on the fact that in practice, the control of the customs registers fell to the same urban elites involved in the trade and mining of metal products. The idea of an abstract institutionalized export control on the part of the authorities, as was unanimously underlined, appears as an ahistorical category in this context, with smuggling representing an important practice by the elites involved.

The contributions to the section by Edoardo Demo (Verona) and Erich Landsteiner (Vienna) were a continuation of the ideas Lacko had begun to develop on regionally comprehensive merchant networks and financing mechanisms beyond the state credit system in the 16th and early 17th centuries. Both concentrated on the role of Italian traders, albeit from different perspectives. Edoardo Demo underlined the importance of the Venetian *terra ferma* with a critical view to the history of historiography, the significance of which has gained relevance in recent studies on the history of trade. In this sense, the importance of trade activities originating in cities such as Verona, Vicenza or Padua appears to relativize the classical narrative of the slow economic decline of Venice. Demo not only stressed the importance of the Bolzano fairs, but also demonstrated the intensity of the *terra ferma*'s trade and credit contacts with Central European centres. The importance of Vienna as a hub of this Italian trade and financing system was particularly emphasized. In addition, commercial relations extended to centres in the Holy Roman Empire such as Cologne, Frankfurt, Nuremberg and Leipzig on the one hand, and to cities such as Linz, Graz, Prague and even Cracow on the other. Textile products manufactured in Northern Italy were characteristic of this Central European trade. Erich Landsteiner's lecture, which analysed the migration of the merchants

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examined by Demo from the small and medium-sized towns of the Venetian *terra ferma* and other northern Italian regions to Augsburg as well as to Vienna, made clear how profound these commercial interdependencies were. Not only the well-known pattern of strong family networks became apparent, but also and in particular the remarkable social rise of many of the immigrants—as sources for Augsburg as well as for Vienna prove. The competitive situation with local traders in Vienna, who feared for their existing business and profits, also shows that the immigrant Italian merchants were predominantly active in goods trading, engaging in financial and leasing transactions close to the state only in exceptional cases such as the copper trade. The possibilities of social advancement open to northern Italian merchants at the turn of the 16th to the 17th century through trade in goods in Augsburg, and even more so in Vienna, illustrates the still important function of Augsburg as a centre for the interregional exchange of goods in Central Europe on the one hand and the lack of trade capital in the Habsburg Monarchy—and especially in Vienna—during the period on the other. Contrary to the fears of the native Viennese merchants, the immigration of their Italian colleagues or competitors factually facilitated the connection of Vienna to supra-regional and global markets and contributed to the long-term development of merchant capital.

The final section of the conference focused on global trade contacts of the Habsburg territories in the 18th century. A key role in the contributions by Daniele Andreozzi (Trieste) and Klemens Kaps (Linz) was assigned to port cities as neuralgic transhipment points and spatially dense nodes of network structures. While Andreozzi concentrated on the role of the free port of Trieste, Kaps's contribution covered routes extending from the Habsburg inland regions via Trieste to Cádiz in Spain. Andreozzi's remarks followed on from general considerations of equilibrium as a condition for contemporary economic reflections. He emphasized that the ideas of mercantile politics in the ruling state did not at all correspond to the commercial practices of the 18th century before impressively presenting the development of dense trade networks of small and medium-sized towns in the Adriatic region which—concentrated around the focal point of Trieste—expanded to the supra-regional and global level: At the end of the 18th century, Trieste was not only the leading Habsburg commercial port and had left its past as a local point of intermediation behind. In addition, the city's new role was accompanied by networking with the most important maritime trading centres along the Mediterranean and Atlantic shores—from Constantinople, Smyrna, Venice, Naples and Genoa to Marseilles, Barcelona, Cádiz, Lisbon, Bordeaux and London. This participation in supra-regional Mediterranean as well as global maritime trade in the Atlantic and Pacific went hand in hand with spectacular transactions, often concluded within the sphere of the state. This was evidenced by the "*Talernegotium*" with the Ottoman Em-

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pire, handled by Johann von Fries until 1766, as well as by the founding of companies including the one for trade with East India by William Bolts. This in turn illustrates the interdependence of close personal relationships extending across various groups of actors and geographical ranges while at the same time closely linking the free port of Trieste to Vienna time and again. Andreozzi's concluding statement that Trieste was increasingly mediating international flows of goods at the turn of the 18th to the 19th century, not least thanks to increasing shipping under the imperial flag, was debated controversially but without a clear conclusion in the discussion.

Klemens Kaps's contribution followed on directly from Andreozzi's remarks and, based on Spanish-Austrian trade between 1713 and 1815, showed the interdependence of the Habsburg-ruled territories in Central Europe with global exchange processes in the western Mediterranean and the Atlantic region. On the basis of selective and quantifiable statistical reports, he pointed out that the western Habsburg regions had been supplying a number of proto-industrial products—in particular linen products, metal goods, glass and wood goods—to Spain and the Hispanic American colonies via Trieste since the 1760s, while the Hungarian regions in particular exported grain, wood and copper. Imports, on the other hand, consisted mainly of colonial goods for consumption and proto-industrial production, ranging from sugar, tobacco, coffee and cocoa to indigo and cochineal dyes. Products from the Iberian Peninsula itself, such as olives, dried fruit or the coveted Castilian merino wool, played a complementary role. The integration of the Habsburg proto-industry, agriculture and mines into the global Atlantic economy provided impulses for production and consumption of a significantly more relevant extent than previously assumed in accordance with cameralistic discourse traditions focusing on the domestic market. These flows of goods were mediated by a large number of agents from various regions with different cultural and political backgrounds. Nevertheless, over the course of the 18th century, stimulated by migration and the mobilization of existing resources, a domestic merchant capital began to develop in which—besides immigrants from the Ottoman Empire, Switzerland and France—intra-Habsburg groups of Milanese, Tyroleans and Bohemians were significant. From the 1760s onwards, these merchants increasingly began to engage in trade with the Spanish Atlantic region. Despite initial failures, they contributed to the integration of Hispanic America and Central Europe through networking, the reduction of transaction costs, and the translation of institutional and infrastructural potentials into concrete business practices. And although repeated conflicts about the radius of action of local merchants and competitive situations concerning the sale of Habsburg goods represented barriers or restrictions to trade relations, economic and spatial interdependencies could only be curbed on an individual basis, not collectively.

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The final discussion of the conference centred on three key aspects. The first was the question of the relationship between economy and domination. In this context, it was unanimously emphasized that the theoretical distinction between the categories of statehood and economy requires further systematic reflection, especially for the period under discussion. It is precisely the tendency toward lesser institutional abstraction of statehood and the close interweaving and overlapping of the roles of agents between political rule and economic action that stimulate this reflection. This was ultimately identified as a field to which, in light of current debates on statehood and economic order at the transnational and global levels, economic historical analyses also lend relevance to the present day. In the same context, it was also pointed out that agent attributions such as that of the "trader" require more differentiated, systematic and diachronic definition efforts. This is all the more true in regard to the origins and identities of merchants, since immigration and acculturation led to a constant recontextualization of identity concepts, loyalties, and socio-economic interaction and action spaces—a complex web of patterns of relationships and agency that can hardly be described with clearly delimited identity attributions focused on state territories. Subsequently, the connection between trade and finance in the sense of commerce proclaimed at the beginning of the conference was underlined as a continuously essential and intrinsic one. Thirdly, the question of the scope of intra-Habsburg economic interdependencies and European and global trade contacts extending beyond the Habsburg lands appeared decisive to the discussants, especially in the sense of relativizing the comparison between the domestic market and foreign trade—a traditional dichotomy that is still strongly cultivated to this day. It was for this reason that many lectures emphasized the complex patterns of interaction rather than focusing on or establishing contradictions or opposition between these two dimensions of trade and finance. Finally, the participants issued a plea to review traditional interpretations and narratives, which are still characterized by enduring assumptions of backwardness in regard to the Habsburg Monarchy and therefore overlook essential development processes and interactions.

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Book Reviews

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Olga Katsiardi-Hering / Maria A. Stassinopoulou (Eds.): Across the Danube. Southeastern Europeans and Their Travelling Identities (17th–19th c.). Brill: Leiden/Boston 2017 (Studies in Global Social History vol. 27, Studies in Global Migration History vol. 9). 330 S. mit 29 Abb.; ISBN 978-90-04-33543-1 (hardback).

Es gibt fünf Argumente, warum es sinnvoll erscheint, diesen Titel der Leserschaft des Jahrbuchs der Österreichischen Gesellschaft zur Erforschung des 18. Jahrhunderts nahezubringen: 1. In dem Sammelband ist viel von Wien und dessen Griechen im 18. und 19. Jahrhundert die Rede; 2. Die Habsburgermonarchie hatte ab dem ausgehenden 17. Jahrhundert bekanntlich erheblichen Anteil an demjenigen Raum, der als „Südosteuropa" bezeichnet wird (Ungarn mit dem Banat, Siebenbürgen, Kroatien, Bukowina, zuletzt auch Dalmatien, zeitweilig auch Nordserbien und die westliche Walachei); 3. Die Handels- und Verkehrspolitik des Wiener Hofes (siehe Vertrag von Passarowitz, 1718) war u.a. darauf ausgerichtet, das wirtschaftspolitische Terrain zu Wasser (Donau, Mittelmeer) zu erweitern; 4. Die beiden renommierten Herausgeberinnen sind seit Jahrzehnten Mitglieder der OGE18; 5. Die Reform- und Entwicklungsprozesse, die innerhalb Österreichs im 18. Jahrhundert in Gang kamen, haben in der südöstlichen Nachbarschaft (Osmanisches Reich) früher oder später nachhaltige Wirkungen hervorgerufen.

Der Sammelband ist in drei Abschnitte gegliedert, denen jeweils 3 bzw. 4 Beiträge zugeordnet sind. Im ersten geht es um Routen und Räume, und die drei Autoren (Ikaros Mantouvalos, Nenad Makuljević, Ioannis Carras) stellen drei Fallbeispiele vor, bei denen Migrationen zwischen den Balkanländern und Ungarn bzw. Russland und die damit verbundenen Identitätsfragen erörtert werden. Der zweite Abschnitt widmet sich den Griechen in Wien – ein Thema, zum dem drei Autorinnen Beiträge geliefert haben: Vaso Seirinidou, Anna Ransmayr und Maria A. Stassinopoulou (Professorin für Neogräzistik an der Universität Wien). Da geht es um Fragen zum Erfolg des Zuzuges und dessen Spuren in der ehemaligen kaiserlichen Residenzstadt. Im dritten Abschnitt, der sich aus Texten von Lyobomir Klimentov Georgiev, Lidia Cotovanu, Constantin Ardeleanu und Dimitrios M. Kontogeorgis zusammensetzt, ist die Rede von Herkunftsräumen, Nationalstaatlichkeit, neuen Netzwerken und politischen Stilfragen. Der Band enthält darüber hinaus 5 Illustrationen, 7 Karten, 13 Graphiken und 4 Schautafeln. Zuzüglich sei auf das reichhaltige Nachschlageangebot hingewiesen, indem es – außer den Fußnoten – nicht nur am Ende jedes Beitrags bibliographische Angaben gibt, sondern am Ende auch eine summarische Auswahlbibliographie sowie ein Orts-, Namens- und Sachregister.

Das eine wenn auch nicht neue Signal, das dem vorliegenden Sammelwerk zu entnehmen ist, besteht darin, dass die Geschichte der *Monarchia austriaca* nicht

nur aus im weitesten Sinn des Wortes „westlichen“ Komponenten besteht, jene in der Regel aber mehr Aufmerksamkeit anziehen als die „östlichen“. Das andere Signal ist, dass sich jener „östlichen“ Facetten hauptsächlich nicht aus Zentraleuropa stammende Autorinnen und Autoren annehmen. Dies ist einerseits darin begründet, dass jene Personen aus Ländern stammen, die einst dem Habsburgerreich angehörten (z.B. Teile Serbiens und Rumäniens), und andererseits, dass viele Archivalien zur auch außerhabsburgischen Geschichte Südosteuropas in österreichischen, vor allem Wiener Archiven, Bibliotheken und Museen lagern. Freilich führt dieser Umstand zum Erfordernis von Polyglottie, die derartige Fachleute weit eher meistern als die in der Alpenrepublik Geborenen und hiermit eine wissenschaftliche Mehrleistung erbringen, der man sehr viel Wertschätzung entgegenzubringen hat – nicht nur aus persönlichem Respekt, sondern auch aus Dankbarkeit im Interesse des Erkenntniszuwachses.

Harald Heppner (Graz)

Marianne Acquarelli: Die Ausbildung der Wundärzte in Niederösterreich. Unter der Herrschaft der Habsburger vom 18. bis zum 19. Jahrhundert. V&R unipress Vienna University Press: Wien 2017 (Schriften des Archivs der Universität Wien, Fortsetzung der Schriftenreihe des Universitätsarchivs, Universität Wien 25). 241 S. mit 3 Tabellen und 52 Abb.; ISBN 978-3-8470-0753-1.

Ausbildung und Tätigkeit von Wundärzten von der Mitte des 18. Jahrhunderts bis zum „Gesetz vom 17. Februar 1873 betreffend die Praxis der Wundärzte“ (aus dem Reichsgesetzblatt 1873, Nr. 25, 125) waren bis zum Erscheinen der vorliegenden Publikation eine äußerst unklare Angelegenheit – womit im Grunde bereits zu Beginn dieser Rezension das Wesentliche gesagt ist.

Das vorliegende Buch ist die Veröffentlichung einer 2016 an der Universität Wien abgeschlossenen Dissertation im Fach Geschichte, was man dem Titel und der Struktur der Publikation auch ansieht. Die Gliederung folgt dem üblichen Aufbau von Dissertationen, die regionalen und zeitlichen Abgrenzungen sind klar definiert und schlüssig, die gedruckten und ungedruckten Quellen sind ausführlich beschrieben, ebenso wie der mühsame Weg diese aufzufinden. Marianne Acquarelli hat sich mit dieser Arbeit einer äußerst mühevollen Aufgabe gestellt und diese in ausgezeichneter Weise gemeistert. Das Buch ist das Ergebnis einer vorwiegend an historischen Quellen orientierten Studie über ein Thema, zu dem es bislang keine fundierten Arbeiten gab. Es ist eine Pflichtlektüre für jene, die sich mit dem Gesundheits- und Sozialwesen sowie der Medizin- und Wissenschaftsgeschichte des 18. und 19. Jahrhunderts in seriöser Weise befassen wollen. Die zahlreichen, sehr übersichtlich gestalte-

ten Tabellen zeigen nicht nur die persönliche Vorliebe der Autorin für leicht fassbare Darstellungen, sondern dienen auch dem raschen Auffinden der zu einem bestimmten Zeitpunkt gültigen Bezeichnung für die chirurgisch tätigen Berufsgruppen, der jeweils gültigen Ausbildungswege, sowie der damit verbundenen Kompetenzen und Tätigkeitsbereiche, die regional häufig unterschiedlich gestaltet waren. Marianne Acquarelli gelingt es mit dieser Studie Klarheit in eine äußerst verwirrende Situation zu bringen und Forschenden den Weg zu weisen, indem sie aus zahlreichen, sehr schwierig aufzufindenden und verstreuten Quellen gewissermaßen einen gut zu benützenden Handlauf erstellt hat.

Das „Gesetz vom 17. Februar 1873 betreffend die Praxis der Wundärzte“ war das Ergebnis eines langen und von wechselnden politischen Schwerpunktsetzungen geleiteten Aushandlungsprozesses, den Marianna Acquarelli ausführlich beschreibt. So kompliziert wie dieser gestaltet war, erscheint auch die sich daraus ergebende gesetzliche Richtlinie.

Zu diesem Zeitpunkt waren Wundärzte tätig, die verschieden Ausbildungswege beschritten hatten. Diese wurden, je nach Ausbildungsweg, als „Patrone“, „Magister“ oder „Doctoren“ der Chirurgie bezeichnet. Ihnen war es erlaubt, verschiedene chirurgische Behandlungen durchzuführen, jedoch keine internistischen. Letztere waren den Doktoren der Medizin vorbehalten. Sollte jedoch vor Ort kein Mediziner anwesend sein oder in sehr dringender Fall vorliegen, war es den Wundärzten gestattet, bzw. waren diese sogar dazu verpflichtet, auch internistische Behandlungen vorzunehmen, wie Marianne Acquarelli ausführt. Aufgrund der Tatsache, dass in ländlichen Regionen nur sehr wenige Doktoren der Medizin verfügbar waren, ergab sich in der Realität die Situation, dass Wundärzte sowohl chirurgische Maßnahmen als auch internistische Therapien vornahmen. Man kann deren Tätigkeit durchaus mit jener von späteren Landärzten vergleichen. Die von diesen Wundärzten ausgeübte Chirurgie war selbstverständlich nicht mit jenen Operationen vergleichbar, die im späten 19. Jahrhundert in den großen Kliniken durchgeführt wurden. Allerdings gehörten zu den Arbeitsbereichen der Wundärzte auch andere Therapien, die an der Körperoberfläche angewandt wurden – etwa das Anlegen von Pflastern, wodurch Wirkstoffe über die Haut in den Körper eingebracht wurden, die Entfernung von Abszessen mit oder ohne deren Eröffnung, das Anlegen von Verbänden bei Schwellungen, die nicht durch Verletzungen verursacht worden waren, die verschiedenen Anwendungen von Wasser mit oder ohne Zusätzen und mit hoher Wahrscheinlichkeit auch die Elektrotherapie. Diese sogenannte „Materia Chirurgica“ umfasste nicht nur Operationen, sondern auch die Anwendung verschiedener Heilmittel, die über die Körperoberfläche

vom Körper aufgenommen wurden.[1] Auch dermatologische Behandlungen gehörten zu diesem Spektrum.

Im ersten Teil des genannten Gesetzes von 1873 wurde das grundsätzliche Verbot der Durchführung von internistischen Therapien durch die genannten Gruppen von Wundärzten aufgehoben. Im Grunde bedeutete dies, dass den bereits praktizierenden Wundärzten erweiterte Kompetenzen eingeräumt wurden. Insofern war dies wohl eher eine Bestätigung der aktuellen Situation in der Praxis, vor allem in ländlichen und mit akademischen Ärzten unterversorgten Regionen. Wie Acquarelli schreibt, bedeutete dies jedoch auch, dass Wundärzte in größeren Gemeinden, an denen auch Doktoren der Medizin tätig waren, nunmehr ebenfalls internistisch behandeln durften. Als Anregung für weitere regionale Recherchen sei hier erwähnt, dass es durchaus interessant wäre, die finanziellen und sozialen Folgen dieser Regelung an einzelnen Orten oder in speziellen Regionen zu analysieren. Immerhin konnte ein erst kürzlich geprüfter Wundarzt doch für viele Jahrzehnte ein ernst zu nehmender Konkurrent für den ansässigen Mediziner sein, vielleicht sogar im Hinblick darauf, dass diese Wundärzte auch chirurgisch arbeiten durften, der akademische Arzt jedoch nur dann, wenn er selbst auch das Magisterium der Chirurgie erworben hatte. Genau genommen bedeutete diese Richtlinie eigentlich eine Aufwertung der Tätigkeit und der Kompetenzen der genannten Gruppen von Wundärzten. Wie sich aus der weiteren Lektüre des Buches v.a. aus den Ausführungen im Kapitel zur Ausbildung der Wundärzte ergibt, dürfte von der Qualität und vom Inhalt der Ausbildungen her dem Bedarf an adäquater medizinischer Versorgung v.a. in medizinisch unterversorgten Gebieten bereits Rechnung getragen worden sein. Der zweite Abschnitt des genannten Gesetztes besagt, dass wundärztliche Diplome nur mehr bis zum Ende des Jahres 1875 erworben werden konnten und in der Konsequenz auch nur Ausbildungen, die vor 1876 abgeschlossen worden waren, zur Ausübung der wundärztlichen Praxis befugten.

Bringt man diese Richtlinien mit den weiteren Ausführungen zu den Ausbildungswegen in der vorliegenden Publikation in Zusammenhang, ergibt sich eine im Grunde kulante Haltung gegenüber jenen Wundärzten, die noch in Ausbildung standen. Offenbar konnten diese ihre Ausbildung abschließen und waren mit den zugehörigen Diplomen befugt zu praktizieren. Wie im ersten Abschnitt des Gesetzes angeführt, durften diese sowohl chirurgisch als auch internistisch behandeln.

Bedenkt man, dass diese letzten Absolventen der Ausbildung zum Wundarzt wohl mehrere Jahrzehnte praktizierten, erscheint diese gesetzliche Richtlinie

1 Vgl. dazu Theresia Valentina Hütter: Die “Materia Chirurgica” von Joseph Jakob Plenk. Analyse eines chirurgischen Lehrbuches des 18. Jahrhunderts. Med. DA, MedUni Wien 2014.

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als eine kluge, gesundheitspolitische Maßnahme für die Übergangszeit, nämlich bis zu jenem Zeitpunkt, an dem ausreichend akademisch ausgebildete Chirurgen bzw. Doktoren der gesamten Heilkunde, in deren Studiengang eine chirurgische Ausbildung integriert war, zur Verfügung stehen würden. Hinzu kommt, dass sich die Chirurgie zum Zeitpunkt, als dieses Gesetz erlassen wurde u.a. aufgrund von technischen Innovationen stark verändert hatte – genannt seien hier Beispiele wie die Antisepsis, die Narkose, die Elektrifizierung der Krankenhäuser und Operationsräume, sowie die veränderten baulichen Rahmenbedingungen, die auch spezielle hygienische Aspekte im Hinblick auf Infektionen, sowie Belüftungs- und Lichtverhältnisse berücksichtigten. Derartige Voraussetzungen konnten naheliegender Weise in den Praxisräumen der Wundärzte wohl kaum umgesetzt werden.

Insofern erscheint es jedoch fraglich, ob für diese Entwicklung die in der älteren medizinhistorischen Literatur üblichen Begrifflichkeiten wie „Abschaffung" der Wundärzte weiterhin benützt hätten werden sollen, zumal Marianne Acquarelli diese Entwicklungen durchaus an verschiedenen Stellen des Buches erwähnt und Studien empfiehlt, die die sozialen und gesundheitspolitischen Auswirkungen dieser Maßnahmen thematisieren – was unbedingt wünschenswert wäre!

Die vorliegende Publikation ist, wie schon eingangs erwähnt, die unumgängliche Grundlage für jegliche seriöse Auseinandersetzung mit dem Gesundheitswesen dieser Epoche. Dies ist vor allem dem Umstand geschuldet, dass Marianne Acquarelli in akribischer Suche verschiedenste Quellen gefunden und analysiert hat. Immerhin gab es zu diesem Thema keinen mehr oder weniger geschlossenen Quellenkorpus, selbst in den gesetzlichen Grundlagen fand sich kaum eine thematische Ordnung. Viele Aspekte ergaben sich erst durch die Analyse von zeitgenössischen Zeitungs- und Zeitschriftenartikeln. Das Kapitel über die für diese Arbeit herangezogenen Quellen sei jeder und jedem ans Herz gelegt, die/der beabsichtigt, Studien durchzuführen, die hauptsächlich aus historischen Quellen erarbeitet werden müssen. Diese Schwierigkeit und die Komplexität der vielfachen Veränderungen des Gesundheitswesens und der politischen Ansichten, die zu Prioritätensetzungen in den Maßnahmen zur Gestaltung von Rahmenbedingungen im Gesundheitswesen führten, hatten eine Fülle von (Sekundär-) Publikationen zur Folge, die weder in die Tiefe gingen, noch die Kontexte berücksichtigten. An mehreren Stellen weißt Marianne Acquarelli darauf hin, dass fundierte Studien über die Tätigkeit von Wundärzten selten sind und von regionalen Situationen häufig auf ganze Länder oder gar ganz Europa geschlossen wird bzw. sich derartige regional begrenzte Studien vom Titel her als allgemein und für ganz Europa gültige Werke empfehlen. Rechtliche Rahmenbedingungen ebenso wie Ausbildungswege werden in der rezenten medizinhistorischen Literatur ebenfalls selten berücksichtigt. Selbst-

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verständlich kann hierbei argumentiert werden, dass es in erster Linie darum geht, die konkrete alltägliche Praxis zu beschreiben und nicht den Idealzustand der Regelungen. Allerdings macht es wohl durchaus Sinn zu wissen, wie die Rahmenbedingungen den Alltag beeinflussten.

Diese – sehr komplexen – Kontexte werden in der vorliegenden Arbeit ausführlich und mit großer Genauigkeit dargestellt. Im Hinblick auf die Ausbildung werden etwa auch die schulischen Voraussetzungen erläutert, die es angehenden Wundärzten überhaupt erst ermöglichten, ihren Beruf zu erlernen. Auch die Kapitel über die Tätigkeitsbereiche der Wundärzte, die Aufgliederung der Chirurgie in die „niedere" und „höhere" Wundarzneikunst, die Interessensvertretungen, wie chirurgische Gremien und die politischen Kontexte, z.B. das Ziel, auch in ländlichen Gebieten ein gut funktionierendes Gesundheitswesen aufzubauen, das besonders während der Regierung von Maria Theresia und Joseph II. eine gesundheitspolitische Priorität darstellte, sind fundiert erarbeitet.

Besonders gelungen ist zudem das Kapitel über die medizinisch-chirurgische Josephsakademie, die vorwiegend aus schwer auffindbaren und wenig berücksichtigten Quellen erarbeitet wurde. An diesem Beispiel wird deutlich, dass es im späten 18. Jahrhundert verschieden Ansichten darüber gab, wie eine adäquate medizinische Ausbildung vor allem für den Einsatz in medizinisch schwach versorgten Gebieten, gestaltet sein sollte.

Abschließend sei nochmals festgehalten, dass diese Publikation Basisliteratur für jegliche Art von Forschungsarbeiten zur Medizingeschichte von der Mitte des 18. Jahrhunderts bis zum Beginn des 20. Jahrhunderts darstellt und somit im Grunde eine Pflichtlektüre, selbstverständlich auch dann, wenn es nicht um die Region Niederösterreich geht. Das Buch verdient den bescheidenen (und daher vielleicht auch irreführenden) Titel, den es trägt, bestimmt nicht. Ein Titel dem auch international mehr Aufmerksamkeit geschenkt werden würde, wie etwa „Die Ausbildung von Wundärzten in den Habsburgischen Ländern am Beispiel von Wien und Niederösterreich" wäre wesentlich zutreffender gewesen. Allerdings kann und sollte dieses Manko durch entsprechend häufiges Lesen und Zitieren dieser ausgezeichneten Publikation entgegengewirkt werden. Die Mühe, der sich Marianne Acquarelli hier unterzogen hat, um ihre äußerst qualitätsvolle Arbeit zu verfassen, sollte auf diese Weise gewürdigt werden. Es wäre zu hoffen, dass auch eine englische Version veröffentlicht werden könnte.

Sonia Horn (Wien)

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Markwart Herzog / Alois Schmid (Hg.): Katholische Aufklärung im Benediktinerreichsstift Irsee. UVK Verlagsgesellschaft: München 2018 (Irseer Schriften N.F. Band 13). 424 S. mit 67 Abb.; ISBN 978-3-86764-814-1.

Im Nachgang zu einer 2013 stattgefundenen Tagung über das kulturelle Leben im Reichsstift Irsee im 18. Jahrhundert legen die Veranstalter nun den dazugehörigen Tagungsband vor. Die darin enthaltenen 16 Beiträge sind in vier thematische Sequenzen gegliedert, die von einer von beiden Herausgebern verfassten Einleitung und einem Epilog flankiert werden. Den Abschluss bildet ein gemeinsames Personenregister. Quellen- und Literaturangaben wurden jeweils direkt den Beiträgen angeschlossen. Auf Abbildungsverzeichnisse wurde verzichtet.

In ihrer Einleitung geben die Herausgeber Markwart Herzog und Alois Schmid einen Überblick über die Aufklärungsforschung in Deutschland und setzen sich mit dem Begriff der „katholischen Aufklärung“ auseinander. Dabei kommen sie zu dem Schluss, dass jeder der synonym verwendeten Termini (katholische Aufklärung, süddeutsche Aufklärung, oberdeutsche Aufklärung) in der einen oder anderen Weise mangelhaft ist. Ihrem Verständnis nach soll „katholische Aufklärung“ die Verbindung von Aufklärung und kirchlichem Bereich verdeutlichen. Hier wird auch der Bogen zum Reichsstift Irsee geschlagen: dessen Anteil an und Rezeption von aufklärerischem Gedankengut soll – da noch ausständig – untersucht werden. „Der klostergeschichtliche Zugriff hat sich in vielen Spezialuntersuchungen als erfolgreicher Forschungsansatz erwiesen. Nun gilt es zu prüfen, inwiefern er auch im Fall Irsee trägt.“ (S.21) Befremdlich mutet an, dass die Autoren am Ende ihres Beitrags nach einer kurzen inhaltlichen Vorstellung sogleich die Ergebnisse des gesamten Bandes zusammenfassen.

Der erste Themenblock vereint unter dem Oberbegriff „Grundlagen“ vier Beiträge, die sich eher allgemein gehalten mit den Vorbedingungen der wissenschaftlichen Blüte Irsees auseinandersetzen. So beschäftigt sich Hannelore Putz eingehend mit der Entwicklung der katholischen Aufklärung und ihrer Erforschung. Sie reflektiert dabei die zeitgenössische Eigensicht von katholischen wie protestantischen Aufklärern ebenso wie deren Bewertung durch die Forschung vornehmlich des 19. und 20. Jahrhunderts. Sie nimmt aber auch auf die neuesten Entwicklungen Bezug und vermeldet nicht ohne Stolz die sich immer mehr differenzierende Sicht auf die Aufklärung und ihre Protagonisten. Als Kern ihrer Untersuchung bleibt die Erkenntnis, dass katholische Aufklärer nicht an der Zerstörung kirchlicher Institutionen gelegen war, sondern ihrer Erneuerung. Stephan Deutinger spürt in seinem Beitrag den Naturwissenschaften im Bayern der Aufklärungszeit nach. Ausgehend von der lange propagierten Meinung, wonach im Bayern des 18. Jahrhunderts in nur geringem Ausmaß

Naturwissenschaften betrieben worden seien, die noch dazu kaum nennenswerte Beiträge hervorgebracht hätten, weist er unter Zuhilfenahme zahlreicher Beispiele nach, dass das Interesse an Naturwissenschaften in der zweiten Hälfte des 18. Jahrhunderts sprunghaft anstieg und durch öffentliche Vorträge und Experimente auch die Bevölkerung erfasste. Deutinger gelingt der Nachweis, dass die naturwissenschaftliche Stärke Bayerns weniger aus herausragenden Einzelleistungen bestand, sondern in der flächendeckenden Durchdringung in den Bereichen Wissenschaft, Bildung und Öffentlichkeit. Claudius Stein befasst sich mit der Beziehung der Bayerischen Akademie der Wissenschaften und der Benediktiner. Ausgehend von einer (letztlich nicht erfolgreichen) Akademiebewegung innerhalb des Benediktinerordens untersucht er die Rolle bayerischer Benediktiner bei der Gründung der Akademie. Zwar waren etliche Gründungsmitglieder Benediktiner, doch waren diese vom ersten Präsidenten der Akademie ohne eigenes Zutun nominiert worden. In weiterer Folge kann die Partizipation bayerischer Benediktiner an der Akademie als zögerlich umschrieben werden, was nach Stein seine Wurzel auch im schwierigen Umgang mit dem Akademiepräsidenten haben mochte. Als letzter Beitrag dieses Themenblocks widmet sich Johann Pörnbacher dem Reichsstift Irsee im 18. Jahrhundert und fokussiert einerseits auf die Baugeschichte, andererseits auf das Hausstudium und individuelle Studien von Konventualen.

Der zweite Themenblock widmet sich der in Irsee betriebenen Forschung und zirkuliert dabei vor allem um die Konventualen Ulrich Weis, Eugen Dobler, Candidus Werle und Ulrich Peutinger, die in insgesamt fünf Beiträgen behandelt werden. Da die Genannten auch Zeitgenossen beziehungsweise Lehrer und Schüler voneinander waren, weisen die Beiträge große Überschneidungen auf, was sich vor allem in der beständigen Wiederholung biographischer Angaben ausdrückt. Während Alois Schmid Ulrich Weis und dessen Überlegungen zur Erkenntnistheorie behandelt, beschäftigt sich Rainer Jehl mit Weis‘ Hauptwerk und seiner wissenschaftshistorischen Rezeption. Im Zentrum des Beitrags von Amand Kraml steht der Mathematiker Eugen Dobler, der an der Ritterakademie in Kremsmünster lehrte und an der Einrichtung der dortigen naturwissenschaftlichen Sammlung beteiligt war. Claudia Schwaab befasst sich mit Doblers Schüler Candidus Werle, der im Irseer Hausstudium und an der Benediktineruniversität Salzburg lehrte, wohingegen sich Ulrich Lehner mit der Philosophie Ulrich Peutingers auseinandersetzt.

Der dritte Themenblock behandelt die „Infrastruktur des Wissens: Bücher – Korrespondenzen – Sammlungen“ und besteht aus drei Beiträgen, die sich je eines Schwerpunkts annehmen. Stephan Kellner widmet sich der Irseer Bibliothek. Unter Rückgriff auf bereits bekannte Thematiken wie das Verhältnis Irsees zur katholischen Aufklärung oder zur Bayerischen Akademie der Wissenschaften und herausragende Einzelpersonen skizziert er die Entwicklung

der Stiftsbibliothek in der Frühen Neuzeit und rekonstruiert ihre Bestände anhand überlieferter Kataloge. Christof Paulus beschäftigt sich mit der Partizipation Irsees an der „res publica literaria" und stellt zu diesem Zweck einige Konventualen und ihre Korrespondenzen vor. Neben dem Komponisten und Musiktheoretiker Meinrad Spieß und seiner Korrespondenz rund um die „Correspondierende Societät der musicalischen Wissenschaften", dem Paulus vergleichsweise breiten Raum zugesteht, sind dies wieder die bereits bekannten Irseer Werle, Dobler, Peutinger und Weis. Ihr Konnex zum Oberbegriff „Korrespondenzen" mag in der Auswertung solcher liegen, was sich jedoch erst durch die Überprüfung der angegebenen Literatur erschließt. Helmut Zedelmaier befasst sich mit der mathematisch-naturkundlichen Sammlung Irsees. Auf Basis unterschiedlicher Quellengattungen versucht er deren Einrichtung und Aufstellung zu rekonstruieren, was durch das Fehlen zeitgenössischer Verzeichnisse erschwert wird.

Der vierte und letzte Themenkomplex widmet sich mit zwei Beiträgen der Kunstpflege in Irsee. Während Franz Körndle den musikalischen Alltag in Irsee untersucht, wobei er sich vor allem auf Orgelmusik konzentriert, untersuchen Markwart und Elisabeth Herzog das Œvre des Irseer Konventualen und Malers Magnus Remy. Neben einer kunsthistorischen Analyse seiner Werke beschäftigen sie sich mit dem Aktionsradius des Künstlers, vor allem mit seinen Beziehungen zu den Franziskanerinnen in Kaufbeuren.

In einem Epilog umreißt Markwart Herzog das Schicksal der Irseer Konventsgebäude nach der Säkularisation unter dem Gesichtspunkt der sich vor allem nach dem Zweiten Weltkrieg etablierenden Erwachsenenbildung. Diese mündeten in der Gründung der Schwabenakademie in Irsee, in deren Räumen 2013 die Tagung abgehalten wurde.

Die Meriten dieses Bandes liegen zweifelsohne in der Einzelleistung der Autorinnen und Autoren. Jeder Beitrag zeichnet sich durch eine profunde Sachkenntnis aus, die ergänzt durch eine solide Quellenarbeit einen in sich stimmigen und ausgewogenen Text ergeben. In der Zusammenschau des gesamten Bandes zeigt sich jedoch ein stark repetitiver Charakter, der jedoch nur dann zu Tage tritt, wenn mehr als nur ein Beitrag gelesen wird. Wie häufig das bei einem Tagungsband zum Tragen kommt, darüber kann trefflich diskutiert werden und mag mit ein Grund gewesen sein, weshalb die Herausgeber in diesen Fällen nicht korrigierend eingegriffen haben.

Manuela Mayer (Wien)

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Karen Green: A History of Women's Political Thought in Europe, 1700–1800. Cambridge University Press: Cambridge 2014. 306 S.; ISBN 9781107085831.

In *A History of Women's Political Thought in Europe 1700–1800*, Karen Green follows on from her co-authored work with Jacqueline Broad, *A History of Women's Political Thought in Europe 1400–1700* (Cambridge University Press: Cambridge 2009). Both volumes together make for a necessary and invaluable contribution to the history of women and European intellectual thought. Indeed, their most salient point is that European intellectual history cannot be understood without integration and appreciation of the experience of women. Both volumes press home this point through the plethora of women and their texts that are vividly identified, analysed and contextualised. Women observed and contributed to the major intellectual debates of their day as did their male contemporaries, and to ignore this fact is to wilfully omit a significant portion of Europe's political development and identity.

Yet this intellectual contribution of women to the European political scene has long been neglected. Thankfully, Green has delivered an ambitious synthesis to correct this tradition of ignorance and forewarn future generations of scholars of the dangers of overlooking the important developments within female political thought. That these insightful contributions made by such influential characters like historian and philosopher Catherine Macaulay have hitherto gone largely unnoticed by historians is a point Green tackles head-on in the masterful introduction to her work, taking to task the historians of political thought who have failed to incorporate women's intellectual writings into their accounts. Although Green's criticism is somewhat unwarranted in certain regards, particularly in the case of her extensive rundown of Jonathan Israel throughout her work, her point that female authors have all too often been marginalised in the history of European ideas and the Enlightenment remains an important one and correct overall.[1]

There is good reason why the eighteenth century deserves its own volume; as Green attests, it was during this period that women "participated in the production of Europe's intellectual life to a far greater extent than in any previous century" (250). This becomes abundantly clear in the nuanced and well-balanced

1 While Macaulay is included in Jonathan Israel, A Revolution of the Mind: Radical Enlightenment and the Intellectual Origins of Modern Democracy (Princeton University Press: Princeton 2009), 29 and 42, Green provides a far more thorough analysis of her, see here 172–187. In his other works, however, Israel has included women to a greater extent and specifically called for greater attention to be paid to Macaulay, see Jonathan Israel, Radical Enlightenment: Philosophy and the Making of Modernity 1650–1750. Oxford 2001, Part 1, Chapter 4: 'Women, Philosophy, and Sexuality,' 82–96 and Israel: "Enlightenment! Which Enlightenment?" In: Journal of the History of Ideas, Vol. 67, No. 3 (2006), 523–545.

account of female political thinkers in the book, which will be of great interest to historians of the eighteenth century.

In their previous volume, Broad and Green sought to expand the notion of political thought by exploring a broader definition of 'political' as well as of the 'thinkers' who wrote political tracts.[2] Green continues this line of argument to great effect in the new volume: She introduces her readers to a wide array of women who commented on and contributed to contemporary political debates through a variety of literary means. Women like the Duchess of Newcastle, Margaret Cavendish, and Catherine Cockburn worked on plays while others, like Eliza Haywood and Madeleine du Scudéry, were famous novelists. Many women also produced translations, often adding to intellectual debates by way of an added preface in which they voiced their own opinions. But women not only worked in a variety of separate literary mediums, they also often transcended genres: Eliza Haywood also wrote successful plays, for example, and Catherine Cockburn penned a defence of John Locke's *An Essay Concerning Human Understanding* to much acclaim by the author.

Green's work is not simply encyclopaedic in nature, however. The focus throughout the book is solidly placed on the ways in which women grappled with the changing times and currents of thoughts during the eighteenth century. And the women of the time were by no means a uniform group: They responded differently, often drastically so, to the events unfolding around them. Green does well to remind us of this fact repeatedly, pointing out the intellectual disagreements between women. A classic example provided early on is how the *anciens* versus *moderns* debate divided women writers—perhaps more so than men, since the underpinnings of societal culture and the roots of proper morality were at stake. Herein Green makes an important and impressive contribution to scholarship on eighteenth-century intellectual thought by offering new views and angles on established areas of study.

Though she generally follows a chronological thread, Green pauses at particular eddies of debate within this turbulent century to offer a more nuanced take on significant events. While this certainly has its merits, it also creates imbalances within the work, giving the reader the impression that women were less interested in certain topics or that there was a paucity of female commentators in some areas. The scientific interests of women, for instance, command the reader's attention for a total of only eleven pages (90–101), while the French Revolution effectively occupies two whole chapters (203–249), nearly a fifth of the entire book.

2 Jacqueline Broad / Karen Green: A History of Women's Political Thought in Europe. Cambridge 2009, 291.

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These imbalances perhaps stem from how Green showcases the extensive research underpinning her work. Existing dichotomies and political categories (i.e. conservative versus radical Enlightenment thinkers, incidentally a distinction championed by Israel) are adhered to and not emphatically challenged. Female political thinkers appear to fit current templates without much in the way of distinction. It would have been fruitful to give more explicit consideration to the ways in which female writers during the examined period did or did not conform to these binaries. Green does the reader an excellent service elsewhere of breaking down the standard boundaries for a writer. Women authors of the eighteenth century were polymaths equal to their male counterparts. Rousseau wrote tomes and operas just like Eliza Haywood wrote plays and novels. Yet it might have been of greater use to her readers had Green shown how female authors blurred the boundaries in ways *different* from their male contemporaries. In which debates, for instance, did women carve out a 'third way', and why did these ideas not transmit to general political thinking? This is either a disappointing decision by the author or—if the sources did lead to such a challenge—then it is an omission of a rather productive vein that could have been tapped for the reader's benefit.

There are nevertheless many strengths that make this an impressive and useful work. Firstly, Green—a professor of philosophy—brings a nuanced understanding to the philosophical and theological aspects of her material. In describing debates that were deeply rooted in a European philosophical and theological heritage of learning, she expertly guides her readers. Secondly, the broadly chronological and geographical contours of the book form helpful subdivisions. This choice allows Green to successfully organise the otherwise gargantuan European dimension of her work. Specific subtopics such as the radicalisation of women, the transition from reformers to revolutionaries, and 'women and dissent' (196–202) are cohesively dealt with as a consequence. Finally, replete with an extensive bibliography of contemporary works and a suitable list of secondary literature, and complemented by an adequate index, the book is very accessible and could serve student curriculums across multiple disciplines including history, philosophy and political sciences.

On a final note, however, Green's reliance on Anglophone and Francophone literature leads to certain shortcomings. There is a noticeable underuse of German-language literature in places where it would seem appropriate. One of the most obvious examples is the case of the Landgravine Caroline Louise of Hesse-Darmstadt and the work on her by Jan Lauts.[3] Readers of this journal will be sad to learn that Green's gaze does not extend to women thinkers in

3 Jan Lauts, Karoline Luise von Baden. Ein Lebensbild aus der Zeit der Aufklärung. Karlsruhe 1990.

the Habsburg Monarchy. There is no obvious reason for this omission, since an inclusion of Habsburg women would have strengthened Green's overall survey of German women. Women in Central Europe have been shown to have been politically engaged—not to mention their prominence in Europe's salon culture.[4] Outwith the Habsburg dynasty, the Viennese writer Caroline Pichler would have been one the many prime examples from this region.[5] In Green's chapter on Germany and Russia, a more structural approach to noble women would also have enabled a deeper appreciation for the ways in which class and social standing profoundly shaped the intellectual outlook of women.

These minor oversights do not detract from Green's overall achievement, however. What she has completed here is an outstanding work that fills an important lacuna in an elegant fashion. Well written, it represents a perfect primer for historians either familiar with the period or seek to explore eighteenth-century women and their political interests.

Jonathan Singerton (Vienna)

Renate Zedinger / Marlies Raffler / Harald Heppner (Hg.): Habsburger unterwegs. Vom barocken Pomp bis zur smarten Businesstour. Amalthea: Graz 2017. 203 S. mit 10 Abb.; ISBN 978-3-7011-0374-4.

Es ist immer wieder eindrucksvoll, wie es in früheren Zeiten – ohne die heute selbstverständlichen Kommunikationsmittel – gelungen ist, eine Reise des kaiserlichen Hofes zu bewerkstelligen. Mit diesem Thema befasste sich 2015 ein Symposium in Graz; der vorliegende Sammelband deckt sich allerdings nur teilweise mit dem Tagungsprogramm. Dennoch liegt ein Schwerpunkt der Beiträge auf Reisen durch oder in die Steiermark. Die AutorInnen beleuchten sehr unterschiedliche Reisen, wie bereits der Untertitel „vom barocken Pomp bis zur smarten Businesstour" andeutet. Dem Reisegrund entsprechend gestalteten sich der Aufwand und die Kosten für die Vorbereitungen und Durchführung der jeweiligen Reise. Bei repräsentativen Reisen musste nicht nur das Zeremoniell festgelegt werden, meist war es dringend notwendig, Wege und Straßen der

4 See for example Rebecca Gates-Coon, The Charmed Circle. Joseph II and the 'Five Princesses' 1765–1790. West Lafayette, IN 2015.

5 See Anke Gilleir, Between Nation and Universe: Caroline Pichler's (1769–1843) Catholicism. In: Ulrich L. Lehner (ed.), Women, Enlightenment and Catholicism. A Transnational Biographical History. London 2017, 149–165; Ritchie Robertson, The Complexities of Caroline Pichler. Conflicting Role Models, Patriotic Commitment, and the Swedes in Prague (1827). In: Women in German Yearbook. Feminist Studies in German Literature and Culture, Vol. 23 (2007), 34–48.

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gewählten Route instand zu setzten, was die Kosten zusätzlich in die Höhe trieb. Für Rasttage sollte ein ansprechendes Unterhaltungsprogramm geboten werden. Die Gastgeber auf dem Reiseweg fühlten sich natürlich durch den Besuch geehrt, aber es bedeutete für sie auch immer „eine mehrfache Herausforderung" (S.103).

Andreas Golob verweist in seinem Beitrag (Mediale Reflexionen auf Schritt und Tritt) auf Zeitungen als ergiebige Quelle für Ankündigungen, Verlauf und Empfänge in einzelnen Orten einer Reise. Als Hintergrund seiner Ausführungen dient ihm u.a. die Erbhuldigungsreise von Karl VI.1728 nach Graz und die Brautreise von Marie Antoinette 1770 nach Paris.

Eva Holz (Die Habsburger in Krain) vergleicht die Besuche der Kaiser Karl VI. (1728), Joseph II. (1783 und 1788) sowie Leopold II. (1790 und 1791), deren Reisen sich durch ihren persönlichen Lebensstil und die jeweiligen Verhältnisse stark unterschieden. Selbstverständlich spielte der Anlass für die Reise für den Aufwand eine wichtige Rolle, ob es sich um eine Erbhuldigung (Karl VI.) oder eine Art Inspektion (beide Reisen von Joseph II.) handelte.

Stefan Seitschek (Die Erbhuldigungsreise 1728) erwähnt die, teilweise bereits edierten, umfangreichen Quellen zu dieser Hofreise. Der Fokus des Autors liegt einerseits auf der Huldigungsschrift von Johann Adam von Heintz und andererseits auf den persönlichen Aufzeichnungen von Karl VI. Zusätzlich zeigt Seitschek, wie schwierig es war, die Geldmittel für diese so kostspielige, weil repräsentative, Reise aufzutreiben. Den Artikel ergänzen drei Tabellen zum finanziellen Aufwand: 1. Reisegelder der Hofbediensteten; 2. Überblick Hofreisen (Prag 1723, Innerösterreich 1728; Karlsbad/Prag-Linz 1732); 3. Reparatur-, Renovierungs- und Versorgungskosten.

Peter Wiesflecker (Kirchen, Klöster und Klausur) weist drauf hin, wie problematisch es häufig war, ein entsprechendes Quartier für die Reiseteilnehmer zu finden. Dieses sollte nicht nur den Ansprüchen genügen, sondern es ermöglichen, „die Grundlinien des höfischen Alltags einigermaßen bei[zu]behalten" (S.87). In diesem Beitrag werden Wallfahrten oder der Besuch von Klöstern, kirchlichen Festen und öffentlichen Gottesdiensten beleuchtet, die das katholische Selbstverständnis der Habsburger, die Pietas Austriaca, öffentlich demonstrierten. Diese Stätten wurden sowohl auf weiteren Reisen oder als reine Pilgerfahrt besucht.

Gernot Peter Obersteiner (Marche-Route durch Steyermarck) schreibt über verschiedene Hofreisen zwischen 1740 und 1765. Diese zeitliche Eingrenzung bezieht sich nicht nur auf Reisen von Maria Theresia. Der Autor legt einerseits dar, welche Vorbereitungen für einen Aufenthalt der Herrscherin in Graz nötig waren und andererseits, welche Verwaltungsänderungen zwischenzeitlich in der Steiermark durchgeführt wurden. Für den Ablauf, Empfang und Aufenthalt der Reise von 1750 stützt sich der Autor auf die Klosterchronik der Ursulinen in

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Graz. Als 1760 Isabella von Parma auf der Brautreise zur Hochzeit mit Josef II. nach Wien durch die Steiermark reiste, waren in hier vor allem die desolaten Straßen ein großes Problem.

Einer besonderen Reise widmet sich Renate Zedinger (Sommer 1765: Auf dem Weg zur Innsbrucker Hochzeit) – Erzherzog Peter Leopold sollte Maria Luisa von Neapel-Bourbon in Innsbruck heiraten. Der Beitrag schließt auch die Einholung der Braut von Genua ein. Die Reise nach Innsbruck samt Aufenthalt stellten an die Vorbereitungen des Hofes enorme Anforderungen, da auch Minister und Hofchargen mitreisen sollten. Sowohl die Quartiere in der Stadt als auch die dortige Hofburg selbst waren für einen derart repräsentativen Aufenthalt eigentlich nicht geeignet. Entsprechender Aufwand war nötig. Pferde, Möbel, nicht verderbliche Speisen, Dekorationen für Aufführungen und Personal wurden bereits vorweg nach Innsbruck geschickt. Erst Franz II./I. sorgte für eine dauerhafte Grundausstattung der Residenzen (S.130), was davor nicht üblich war. Die Reise des Herrscherpaares verlief nicht über die bequemere Strecke – Donau, Inn – sondern über die Südroute. Das schloss eine äußerst strapaziöse Strecke von Wien nach Graz mit einer Reisedauer von 15 Stunden ein. Die Hochzeit selbst wurde bereits ausführlich aufgearbeitet, wie die Autorin betont. Der Tod von Franz Stephan in Innsbruck beendete weitere Feierlichkeiten abrupt.

Cornelia Nitz und Harald Heppner (Josef II. 1773 in Siebenbürgen und Galizien: Business pur?) befassen sich mit Josef II., der gern und viel reiste. Er soll ungefähr „ein viertel seines Lebens auf ‚Achse' verbracht haben" (S.142). Seine Reise nach Galizien und Siebenbürgen diente zur Information über den Zustand des Landes und seiner Bevölkerung und war daher nicht repräsentativ angelegt. Josef führte ein Reisejournal, das als zusammenhängender Bericht für seine Mutter über den Zustand der Länder angelegt war (S.144).

Sandra Hertel und Christian Benedik (Zur Wiedererinnerung der gesehenen Merkwürdigkeiten) widmen sich der Italienreise von Erzherzogin Marie Christine und ihrem Gemahl Herzog Albert von Sachsen-Teschen im Jahre 1776. Herzog Albert hatte begonnen, eine Kupferstichsammlung aufzubauen. Seine Sammeltätigkeit war allerdings nicht der zentrale Grund für diese Reise nach Italien. Es sollten die Geschwister von Marie Christine und deren Familien in Mailand, Turin, Parma und Neapel besucht werden. Maria Theresia wünschte sich durch ihre Lieblingstochter „unverfälschte Berichte über die dort verheirateten Söhne und Töchter zu erhalten" (S.155). Deshalb unterstützte die Herrscherin diese Reise finanziell. Albert verfasste über die Reiseerlebnisse eine ausführliche Beschreibung, die nach dem Tod seiner Frau Eingang in seine Memoiren fand. Kunst ist darin natürlich ein wichtiges Thema, aber auch Menschen und Verwaltung der bereisten Städte. Marie Christine verfasste für ihre Mutter einen ungeschönten Bericht über die Familien ihrer Geschwister, wie es

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Maria Theresia ausdrücklich verlangt hatte. Darüber waren ihre Geschwister, die das vermuteten, naturgemäß nicht sehr erfreut.

Claudia Ertl und Daniel Modl („[…] in Unserer Gegenwart ein altes Griechisches Grab ausgegraben“) nehmen sich Reiseberichte „der Habsburger im 18. und 19. Jahrhundert aus dem Blickwinkel der Archäologie“ vor. Sowohl Kaiser Franz I. (Italienreise 1819) als auch Erzherzog Johann (Englandreise 1815/16 und Krimreise 1837) berichten „mit scharfem und kritischem Blick“ (S.196) in ihren Aufzeichnungen darüber. Diese werden durch die mitreisenden Künstler noch bildlich vervollständigt. Gemeinsam ist das eine wichtige Quelle für die Anfänge der Archäologie als Wissenschaft. Ergänzt wird dieser Beitrag durch Abbildungen sowie Karten von den Reiserouten der beiden Habsburger.

Englische Abstracts sind am Ende des Buches beigefügt. Es zeigt sich in allen Beiträgen deutlich, welch ungeheuren Aufwand die Vorbereitungen zu einer Reise der Habsburger erforderten. Man wundert sich manchmal, dass diese ob der zahlreichen Hürden überhaupt stattfinden konnten. Und das meist sogar erfolgreich.

Amüsant ist es, wenn sich während des Lesens Parallelen zu heutigen Staatsbesuchen einstellen. Diese haben wahrscheinlich meist andere Erfordernisse, wie Straßen zu reparieren. Es werden aber auch hier in der Vorbereitung viele Probleme auftauchen, die ähnlich gelagert sind, wie die abwechslungsreich geschilderten Reisen im vorliegenden Buch.

Renate Schreiber (Wien)

Buchreihe „Veröffentlichungen zur Bau- und Funktionsgeschichte der Wiener Hofburg“.

Band 1: Mario Schwarz (Hg.): Die Wiener Hofburg im Mittelalter. Von der Kastellburg bis zu den Anfängen der Kaiserresidenz. Verlag der ÖAW: Wien 2015. 601 S. mit zahlr. Abb.; ISBN 978-3-7001-7656-5.

Band 2: Herbert Karner (Hg.): Die Wiener Hofburg 1521–1705. Baugeschichte, Funktion und Etablierung als Kaiserresidenz. Verlag der ÖAW: Wien 2014. 627 S. mit zahlr. Abb.; ISBN 978-3-7001-7657-2.

Band 3: Hellmut Lorenz / Anna Mader-Kratky (Hg.): Die Wiener Hofburg 1705–1835. Die kaiserliche Residenz vom Barock bis zum Klassizismus. Verlag der ÖAW: Wien 2016. 629 S. mit zahlr. Abb.; ISBN 978-3-7001-7843-9.

Band 4: Werner Telesko (Hg.): Die Wiener Hofburg 1835–1918. Der Ausbau der Residenz vom Vormärz bis zum Ende des „Kaiserforums“. Verlag der ÖAW: Wien 2012. 544 S. mit zahlr. Abb.; ISBN 978-3-7001-7231-4.

Band 5: Maria Welzig (Hg.): Die Wiener Hofburg seit 1918. Von der Residenz zum Museumsquartier. Verlag der ÖAW: Wien 2018. 607 S. mit zahlr. Abb.; ISBN 978-3-7001-8028-9.

Im Jahr 2003 entwickelte die ehemalige Kommission für Kunstgeschichte der Österreichischen Akademie der Wissenschaften (nun Abteilung Kunstgeschichte des Instituts für kunst- und musikhistorische Forschungen) unter der Leitung von Artur Rosenauer die Idee, die Bau- und Nutzungsgeschichte der Wiener Hofburg zu erforschen und die Ergebnisse in einer mehrbändigen Reihe – ähnlich der zuvor durch die Kommission verfassten *Geschichte der bildenden Kunst in Österreich* – zu publizieren. Auf die Skizze folgte die Einwerbung von Drittmitteln für insgesamt fünf Teilprojekte beim FWF: Die Wiener Hofburg im Mittelalter (Leitung: Mario Schwarz), Die Wiener Hofburg im 16. und 17. Jahrhundert (Leitung: Herbert Karner), Die Wiener Hofburg im 18. Jahrhundert (Projektleitung: Hellmut Lorenz, Herausgabe des Bandes gemeinsam mit Anna Mader-Kratky), Die Wiener Hofburg im 19. Jahrhundert (Leitung: Werner Telesko) und die Wiener Hofburg im 20. Jahrhundert (Leitung: Maria Welzig).

2012 erschien mit dem 4. Band der Serie, *Die Wiener Hofburg im 19. Jahrhundert*, die erste Publikation eines Teilprojekts. Sechs Jahre später liegen nun alle fünf Bände der Hofburg-Reihe vor. In den vergangenen Jahren erschienen bereits einige Rezensionen zu den einzelnen Bänden, die jeweils von Experten der einzelnen Epochen verfasst wurden. An dieser Stelle soll jedoch einmal versucht werden, alle fünf Bände insgesamt zu bewerten und ein Urteil über die Reihe an sich zu fällen.

Bei einem Forschungsunternehmen dieser Größenordnung ist der erste Eindruck unzweifelhaft imposant. Rund 40 MitarbeiterInnen mit unterschiedlichem Beschäftigungsausmaß legten am Ende zu 800 Jahren Baugeschichte insgesamt 3000 Seiten Erkenntnisse vor (vgl. die Website des IKM: https://www.oeaw.ac.at/ikm/das-institut/news-detail/article/die-hofburg-in-der-hofburg-1/ [Zugriff: 02.01.2019]). Angesichts des Trends in der Wissenschaft, in ca. dreijährigen drittmittelfinanzierten Einzelprojekten rasche Publikationserfolge in internationalen Journals zu erzielen, zählen Unterfangen wie die Hofburg-Reihe somit zu einer aussterbenden Forschungs- und Publikationsform. Ihre Umsetzung erfordert wesentlichen institutionellen Rückhalt, zusätzliche Geldgeber aus der Wirtschaft (in diesem Fall die UniCredit Bank Austria AG, die die Drucklegung von vier Bänden finanziert hat) und Durchhaltevermögen und Leidensfähigkeit aller Teilnehmenden. Auch wenn die aufwendige und kostenintensive Publikationsform eines reich illustrierten Buches nicht mehr zeitgemäß erscheint, stellt sich hier nun die Frage: Hat sich der Aufwand denn gelohnt?

Kommen wir daher zum Thema an sich: Die Wiener Hofburg. Nach einigen Gesamtdarstellungen der Baugeschichte aus dem späten 19. und frühen 20. Jahrhundert legte die Forschung in der zweiten Hälfte des 20. Jahrhunderts vorwiegend Untersuchungen zu einzelnen Gebäudeteilen oder Epochen vor. Die Notwendigkeit einer grundlegenden Untersuchung des Baukomplexes mit neu erschlossenen Quellen und modernen Fragestellungen war also gegeben. Gerade die neuen Techniken der historischen Bauforschung, wie etwa die dendrochronologischen Untersuchungen des verbauten Holzes zur Bestimmung des Fälldatums, ermöglichten den Forscherinnen und Forschern viele neue Erkenntnisse. Doch ist es vor allem die enorme politische, kulturelle und symbolische Bedeutung des historischen Baukomplexes im „Herzen der Republik Österreich", die ihre Erforschung auch aus kulturpolitischen Beweggründen relevant macht. Gerade aus diesem Grund ist es sinnvoll, die Baugeschichte nicht mit dem Ende der Monarchie abzuschließen, sondern in einem (erst später hinzugekommenen) 5. Teilprojekt auch die Nutzungsgeschichte der Wiener Hofburg im 20. und beginnenden 21. Jahrhundert darzustellen.

Auch bedingt durch den Forschungsgegenstand und die Forschungsschwerpunkte der AutorInnen setzten die einzelnen Projekte unterschiedliche Schwerpunkte. Der Band zum Mittelalter hat naturgemäß den kleinsten Untersuchungsbereich, den heute als Schweizerhof bekannten mittelalterlichen Kern der Burg. Die Methoden der Bauforschung ermöglichten erstmalig die Datierung und Zuordnung verschiedener Gebäudeteile, wodurch die frühe Nutzungsgeschichte der Burg und der Augustinerkirche als spätere Hofkirche rekonstruiert werden konnte. Durch internationale Vergleiche konnte zudem der Stauferkaiser Friedrich II. als Bauinitiator der mittelalterlichen Kastellburg identifiziert werden, die anschließend von den Babenbergern vollendet wurde.

Die beiden Bände zur Frühen Neuzeit widmeten sich nicht nur den Erweiterungs- und Umbauten, sondern auch und im Speziellen der repräsentativen Nutzung und Ausstattung der Residenz. Hier gingen auch Forschungen zu höfischer Sammlungskultur, Theater, Festen und zeremonieller Raumnutzung in die Darstellungen ein. Der Band zum 19. Jahrhundert verlässt diesen Schwerpunkt und widmet sich umfassend den Ausbauplänen im Rahmen des Kaiserforums und der Stadterweiterung mit dem Bau der Ringstraße, der Neuen Burg und der beiden Museen. Stellten zuvor die jeweiligen Oberhäupter des Hauses Habsburg die Initiatoren von Bauprojekten dar, spielte die Dynastie im 4. Band praktisch keine Rolle mehr. Im 5. Band stand die vorwiegend museale Nutzung des Hofburgareals nach dem Ende der Monarchie im Vordergrund. Besondere Aufmerksamkeit wurde der Entwicklung und Umsetzung des Museumsquartiers gewidmet, aber auch die Besetzung und Instrumentalisierung der Hofburg durch unterschiedliche politische und gesellschaftliche Gruppen von 1918 bis zur Gegenwart beleuchtet.

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Der rote Faden der Buchreihe ist die von allen AutorInnen überzeugend herausgearbeitete und wiederholt betonte Bedeutung des historisch gewachsenen Baukomplexes für die Legitimität, Tradition und Kontinuität der jeweiligen Herrscher – und dies über das Bestehen der Monarchie hinaus. Bereits die mittelalterlichen Habsburger nutzten die Wiener Hofburg, um ihre Herrschaft über Österreich als Kontinuität zur Babenberger-Herrschaft zu inszenieren. Der stetig wachsende Machtkomplex und die zahlreichen neuen europäischen Gebiete fanden auch in der Frühen Neuzeit ihren Niederschlag im historischen Hauptsitz der Habsburgermonarchie. Die regelmäßig wiederkehrenden Pläne für einen teilweisen oder kompletten Neubau der Residenz wurden zugunsten der historisch gewachsenen und daher oft unharmonisch wirkenden Struktur verworfen – das komplexe Kuddelmuddel an historischen Bauteilen wurde zum Aushängeschild und Alleinstellungsmerkmal der Residenz einer der ältesten europäischen Herrscherdynastien. Besonders deutlich wurde die Funktion der Hofburg als Projektionsfläche für unterschiedliche Interessen im letzten Band. Nachdrücklich wurde dadurch nicht nur der Sinn des Forschungsvorhabens unterstrichen, sondern auch die zeitgenössische Debatte um einen historisch rücksichtsvollen und zugleich differenzierten Umgang mit dem architektonischen Erbe in der gegenwärtigen Republik Österreich bereichert.

Trotz des unbestreitbaren Verdienstes, eine international in dieser Dichte einmalige Gesamtdarstellung eines europäisch bedeutenden Residenzkomplexes geschaffen zu haben, ist auch einige Kritik an der Gesamtreihe anzubringen. Die Entscheidung des Mittelalter-Projekts, auch die Stadt- und Pfarrkirche St. Michael und ihre – kaum nachweisbare – Bedeutung für die Hofburg zu untersuchen, ist nicht nachvollziehbar, zumal diese in den folgenden Bänden keine Rolle mehr spielt. Auch sind die detailreichen Beschreibungen der Mauer- und Steinfragmente, ohne die verdienstvolle Arbeit der BauforscherInnen in Abrede zu stellen, in der hier gebotenen Ausführlichkeit ermüdend. Die beiden eng verwandten Bände der Frühen Neuzeit weisen vor allem eine im Vergleich problematische Gliederung auf. Beiden Bänden ist die Schwierigkeit der HerausgeberInnen anzumerken, die Fülle des Materials in eine übersichtliche und zugleich kontextualisierte Darstellung zu fassen. Während im 2. Band alle Gebäudeteile nacheinander durch die Jahrhunderte erklärt werden – wodurch die Querbezüge zwischen den Kapiteln häufig zunächst unverständlich sind – erzählt der 3. Band die Baugeschichte gleich doppelt aus zwei unterschiedlichen Perspektiven. Die dadurch entstandenen Redundanzen sind für Leser des gesamten Werks zwar unnötig, ermöglichen aber auch die gezielte Nutzung des 3. Bandes als Handbuch.

Beschäftigten sich die frühneuzeitlichen Bände intensiv mit der Nutzung der Residenz durch die Habsburger, spielten jene Fragen im zuerst erschienenen und kürzesten Band über das 19. Jahrhundert keine Rolle mehr. Wenngleich die

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Planungs- und Baugeschichte des Kaiserforums als Mammutprojekt zweifelsohne von großer Bedeutung ist – der die umfassende Darstellung hier auch gerecht wird – ist die tatsächliche Nutzung der Hofburg durch die kaiserliche Familie viel zu knapp gehalten. Der 5. Band wagt den schwierigen Spagat, sowohl eine Nutzungsgeschichte als auch eine Geschichte zahlreicher Kulturinstitutionen zu erzählen. Dass die Entstehung des Bandes auch in vielfacher Weise von der Kooperation eben dieser Institutionen abhing ist gerade bei der jüngsten Zeitgeschichte von großem Nachteil, da sich hier die Darstellung im Band wie ein touristischer Werbeflyer liest. Die auch in allen anderen Bänden anzutreffenden Redundanzen finden sich im 5. Band leider in großem Ausmaß, da einzelne Themen (bspw. „Die Hofburg in der NS-Zeit") direkt hinter einander von unterschiedlichen AutorInnen doppelt behandelt werden.

Unschlüssig war das Team auch bei der Einbeziehung internationaler Vergleiche, die sporadisch erfolgten und dem jeweiligen Buchschwerpunkt angepasst waren. Offenbar gaben die BegutachterInnen der einzelnen Bände die Standard-Empfehlung, die Erkenntnisse in einen breiteren Kontext zu stellen, was in den einzelnen Bänden mit unterschiedlich großem Elan umgesetzt wurde. Für eine Gesamtbewertung der Bauentwicklung der Wiener Hofburg bleiben diese bruchstückhaften Episoden leider ohne große Relevanz. In über 3000 Seiten wären auch einige Kürzungen sinnvoll gewesen. Die umfangreichen Funde in den Quellen führten häufig dazu, zu viele Details in die Gesamtdarstellung einfließen zu lassen, wie etwa der mehrfache Austausch von Türstöcken oder die Neuausmalung von Stiegenhäusern.

Stilistisch ist eine Gesamtdarstellung von 40 verschiedenen AutorInnen natürlich grundsätzlich schwierig zu bewerten. Doch trotz einzelner weniger gut geschriebenen Abschnitte sind die Bände dem Anspruch, nicht nur wissenschaftlich fundiert, sondern auch lesbar zu schreiben, nachgekommen. Besonders gelungen ist die einheitliche Grafik der Bücher durch Peter Manfredini und die großzügige, durchgehend farbige Bebilderung der Bände. Die ansprechende Optik sollte auch ein fachfremdes, interessiertes Publikum ansprechen, was angesichts des stolzen Preises und der Publikation in einem reinen Wissenschaftsverlag wenig konsequent umgesetzt wurde. Doch sind die Abbildungen ja nicht nur reines Lockmittel, sondern wertvolle und sorgfältig ausgewählte Quellen zur Verdeutlichung und Vertiefung der verschriftlichen Erkenntnisse. Lobend hervorzuheben sind die nicht nur sehr hilfreichen, sondern auch ansprechenden 3D-Visualisierungen der einzelnen Hofburg-Gebäude in unterschiedlichen Bauphasen, mit denen vor allem die ersten drei Bände großzügig bestückt wurden. Die von Herbert Wettine vorgenommenen Umsetzungen werden derzeit für eine virtuelle Weiternutzung vorbereitet, was angesichts der Vermittlungsleistung dieser Darstellungsform sehr wünschenswert ist.

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Über eine 3000 Seiten starke Buchreihe in wenigen Zeilen zu einem Gesamturteil zu kommen erfordert Reduktion, viele weitere lobens- und kritikwürdige Aspekte könnten angesprochen werden. Unbestreitbar ist diese aufwendige und mit viel Liebe zum Detail geschaffene Gesamtdarstellung nicht nur für die Forschung, sondern auch die österreichische Gesellschaft ein Gewinn – um die eingangs gestellte Frage zu beantworten – und wird noch lange als *die* zentrale Publikation zur Wiener Hofburg gelten. Ob der kostenintensiven Produktion die entsprechende Würdigung zuteil kommt, bleibt abzuwarten. Alle fünf Bände zu lesen erfordert zugegebenermaßen eine Kraftanstrengung – aber man wird auch mit vielen, mitunter überraschenden Erkenntnissen belohnt. Wer's leichter mag: Eine einbändige, populärwissenschaftliche Darstellung ist vor Kurzem im Brandstätter Verlag[1] erschienen.

Sandra Hertel (Bochum)

1 Renate Leggatt-Hofer / Reinhold Sahl (Hg.): Die Wiener Hofburg. Sechs Jahrhunderte Machtzentrum in Europa. Wien–München 2018.

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Zusammenfassungen und Abstracts

Mikkel Munthe Jensen, Marco Quaggiotto, Joëlle Weis

VIA – Virtual Itineraries of Academics

Zusammenfassung:
Digitale Methoden sind ein großer Gewinn für die Erforschung frühneuzeitlicher Gelehrsamkeit, so etwa bei der Erschließung supranationaler Korrespondentennetzwerke. Gelehrtes Reisen wurde dabei bisher nur sporadisch in den Blick genommen. Dennoch ermöglichen neue Visualisierungsmethoden auch hier ein besseres Verständnis, was die außerordentliche Mobilität der Akteure betrifft. Das hier vorgestellte Visualisierungstool VIA wurde anhand einer case study zur Reisekultur nordischer Universitätsangehöriger entwickelt. Es erlaubt dem Benutzer eine Erkundung von Daten rund um akademische Mobilität, wobei vor allem die dynamische Filtermethode zum Experimentieren einladen. VIA schafft es so, Mobilität – trotz aller Unvollständigkeiten in prosopographischen Datensets – sichtbar zu machen und unterschiedliche Reisen und deren Akteure miteinander in Bezug zu setzen. Für den Benutzer erschließen sich damit neue Analysemöglichkeiten. Darüber hinaus hilft das Tool, bisher unerforschte Zusammenhänge zu erkennen und kann dabei helfen, neue Forschungsfragen aufzuwerfen.

Abstract:
Digital Methods are an important help for research on early modern scholarship, especially for investigations on vast supranational correspondence networks. At the same time, scholarly travels are only rarely considered, although new visualization methods are most instrumental in gaining insights in the remarkable mobility of the actors. The presented visualization tool VIA was developed as a case study for the exploration of Nordic academic travel culture. It allows the user to browse through data concerning academic mobility by experimenting with dynamic filtering methods. Despite severe fragmentariness of the underlying prosopographical data set, VIA manages to show mobility and allows to make connections between the individual travels and the travellers, which finally enables new perspectives on the material.

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Marion Romberg

Maps, Timelines, Search Features, and Indices

Zusammenfassung:
In der späten Renaissance um 1570 entwickelten die Humanisten eine neue "Abkürzung", um die Welt auf einen Blick darzustellen: die Personifikationen der vier Kontinente (Europa, Asien, Afrika und Amerika). In den nächsten 230 Jahren verbreitete sich dieses ikonische Schema über ganz Europa. Alle bekannten Medien wurden eingesetzt, um die vier Erdteile in die Öffentlichkeit und in die Häuser der Menschen zu bringen. In dieser langen Geschichte der Erdteilallegorien wurde der Höhepunkt im späten Barock und insbesondere im Süden des Heiligen Römischen Reiches erreicht. Im Jahr 2012 begann ein Projektteam der Universität Wien mit der Arbeit an einem Projekt, dessen erstes Ziel darin bestand, eine systematische Erfassung aller Erdteilallegorien im genannten Untersuchungsraum durchzuführen. Das zweite Ziel war nicht nur die Schaffung eines großen Datenpools, sondern die Entwicklung einer interaktiven Datenbank mit verschiedenen Mitteln für den Zugriff auf die Daten (Karten, Zeitleiste, Raster). Dieser Artikel präsentiert eine Fallstudie mit dem Ziel, ein weiteres Beispiel für die Verwendung der Datenbank für die Recherche zu liefern. Der rote Faden wird wiederholt durch technische Erläuterungen zu in der Datenbank implementierten Werkzeugen unterbrochen.

Abstract:
During the late Renaissance, around 1570, humanists developed a new "shorthand" way for representing the world at a single glance: personifications of the four continents (Europe, Asia, Africa, and America). During the next 230 years, this iconic scheme proliferated widely. All known media were employed to bring the four continent allegories into the public and into people's homes. Within this prolonged history of personifications of the continents, the peak was reached during the late Baroque period and especially in the South of the Holy Roman Empire. In 2012 a project team from the University of Vienna started work on a project which first objective was to conduct a systematic survey. The second objective was not merely to create a big data pool, but to develop an interactive database with various means to access the data (maps, timeline, grids). This paper will focus on a particular instance of these continent allegories with the aim of providing an example of how to use the database for research. This narrative strand will be interspersed with technical explanations of tools integrated into the database.

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Claudia Resch, Dario Kampkaspar
DIGITARIUM

Zusammenfassung:
Die digitale Erschließung historischer Zeitungen verspricht Forschenden aus zahlreichen geisteswissenschaftlichen Disziplinen neue Möglichkeiten der Auswertung. Vorliegender Beitrag gibt einen Überblick über die digitale historische Zeitungslandschaft im deutschsprachigen Raum und erläutert den Mehrwert einer verlässlichen Volltexterschließung gegenüber der reinen Bilddigitalisierung. Am Beispiel der „Wiener Zeitung", zu Beginn des 18. Jahrhunderts als „Wien[n]erisches Diarium" gegründet, soll gezeigt werden, welche Verarbeitungsschritte nötig sind, um aus den digitalisierten Bildern durchsuchbare Volltexte zu erstellen. Das Volltextkorpus, das derzeit an der Österreichischen Akademie der Wissenschaften entsteht und in der Webapplikation DIGITARIUM verfügbar sein wird, ist mit mehreren hunderten Ausgaben nicht nur eine repräsentative Basis für eine Reihe von u.a. geschichts-, medien- und sprachhistorischen Erkenntnisinteressen, sondern trägt mit seiner Fülle an manuell korrigierten Textdaten auch dazu bei, ein Modell zu entwickeln, mit dem weitere historische Zeitungsausgaben künftig weitgehend automatisch eingelesen, verarbeitet und ergänzt werden können.

Abstract:
The digitization and digital processing of historical newspapers promises new research perspectives and possibilities of analysis for scholars and researchers from various disciplines within the humanities. This contribution provides an overview of the state of the art in regard to digitization of historical newspapers and explains the added value of reliable full-text processing as opposed to mere image digitization. Using the example of the "Wiener Zeitung", founded at the beginning of the 18th century as the "Wien[n]erisches Diarium", this contribution will break down the digitization process into the individual steps required to turn digitized images into machine-readable and machine-searchable full-texts. The full-text corpus currently being processed at the Austrian Academy of Sciences will be made available online via the web application DIGITARIUM. With several hundred issues digitized, it will not only constitute a representative foundation for various academic research endeavors in disciplines such as history, media studies and linguistics. Thanks to its wealth of manually corrected textual data, it also contributes to the development of a practical model for future digitization projects concerned with (largely) automated processing and annotation of historical newspapers or similar sources.

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Per Pippin Aspaas, Katalin Pataki

Did Astronomy Constitute a Denominationally Neutral Space within the Republic of Letters?

Zusammenfassung:
Zahlreiche astronomische Observatorien wurden während des achtzehnten Jahrhunderts in ganz Europa eingerichtet, wodurch Astronomie zu einem eigenen Teilfeld der Gelehrtenrepublik wurde. Man könnte behaupten, dass Astronomie um die Jahrhundertmitte einen konfessionell neutralen Raum bildete und sich zu einer wissenschaftlichen Disziplin im modernen Sinn entwickelte. Jesuiten, Benediktiner, Lutheraner, Anglikaner, Kalvinisten – alle beteiligten sich an einem regen Austausch „korrespondierender Beobachtungen", der ebenso transnational wie transkonfessionell war. Doch welche Folgen für hatten einschneidende Ereignisse wie etwa die Auflösung der Gesellschaft Jesu 1773 für die entsprechenden Korrespondenznetzwerke? In diesem Beitrag experimentieren wir mit Hilfe von Visualisierungswerkzeugen, um möglichen Wirkungen der Auflösung des Jesuitenordens 1773 nachzugehen. Unser Fallbeispiel ist die erhaltene Arbeitskorrespondenz dreier habsburgischer Astronomen – Maximilian Hell SJ in Wien, Ferenc Weiss SJ in Trnava/Budapest, und Placidus Fixlmillner OSB in Kremsmünster.

Abstract:
Numerous astronomical observatories were established across Europe over the course of the eighteenth century, rendering astronomy a distinct sub-branch of the Republic of Letters. Arguably, by the mid eighteenth century astronomy functioned as a denominationally neutral space and constituted a scientific discipline in the modern sense. Jesuits, Benedictines, Lutherans, Anglicans, Calvinists – all engaged in a fruitful exchange of „corresponding observations" that was both transnational and transconfessional. But what effect, if any, did dramatic turns of events, such as the universal dissolution of the Society of Jesus in 1773, have on their correspondence networks? In this article, we experiment with the use of visualization tools to trace possible effects of the 1773 dissolution of the Jesuit order. Our test case is the surviving professional correspondence of three Habsburg astronomers – Maximilian Hell SJ in Vienna, Ferenc Weiss SJ in Trnava/Budapest, and Placidus Fixlmillner OSB in Kremsmünster.

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Jonathan Singerton

A Revolution in Ink

Zusammenfassung:
Der amerikanische Revolutionär und „Founding Father" Benjamin Franklin hatte bedeutende Verbindungen zur Habsburgermonarchie. Zwischen 1776 und 1789 erhielt Franklin 253 Briefe von 93 Personen, die entweder in den habsburgischen Ländern lebten oder von dort stammten. Dieser Artikel gibt erstmals einen Überblick über dieses Briefnetzwerk. Er diskutiert die Beschaffenheit dieses Netzwerks sowie die individuellen Kommunikationsstrategien der Korrespondierenden. Der Beitrag ermöglicht es, die entscheidenden Verbindungspersonen Franklins in der Habsburgermonarchie auszumachen und zeigt, wie sich die öffentliche Wahrnehmung Franklins vom Wissenschaftler zum Revolutionär verschiebt.

Abstract:
The American revolutionary and Founding Father Benjamin Franklin had significant ties to the Habsburg Monarchy. Between 1776 and 1789, Franklin received 253 letters from 93 individuals who either lived in or came from the Habsburg lands. Franklin corresponded with 15 Habsburg inhabitants during the same period. This article presents for the first time an overview of this epistolary network. It discusses the nature of individuals within the network and their strategies for communication. By examining this network we can discern Franklin's crucial points of contact within the Habsburg Monarchy as well as see how his public persona altered from scientist to revolutionary.

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